The Commercial Car Journal

VOLUME XVIII PHILADELPHIA, OCTOBER 15, 1919 NUMBER 2

National Motor Truck Development Tour Ends in Milwaukee With Caravan Ahead of Schedule

In Spite of the Long Grind and the Almost Impassable Roads, During the Last Week of the 3,500 Mile Trip, Trucks Roll Into Last Night Control Earlier Than Expected. Worst Kind of Mud Roads Prove No Hindrance to Caravan of Trucks and They Plow Through in Splendid Demonstration of Mechanical Stamina

By A. V. COMINGS

WITH almost 3500 miles of daily gruelling grind over all kinds and conditions of midwest country roads to their credit, the eighteen motor trucks that made history in the first National Motor Truck Development Tour, rolled into final control at Milwaukee **ahead of time**. Steep hills, mud roads, slippery as though coated with cup grease, soft going where wheels clogged and differentials cut a convex pattern between the ruts; sharp, crumbling fills that threatened momentarily to capsize trucks and finally did spill one on its side—all these the eighteen trucks put behind them as inexorably as day dawned and waned, and dawned again. And when the trucks reached the wide, white ribbon of concrete marking the last few miles to journey's end, drivers stepped on accelerators, gave 'em the gas, and the mud-grimed machines went rushing down into the last control with sirens blowing and every man on the job satisfied that motor truck performance had been demonstrated once and for all time in a manner decisive and final.

The big test of the caravan's stamina came in the last few days, when heavy rains made some of Wisconsin's clay roads almost impassable. Out of La Crosse the train wound into Wisconsin hills, where roads got worse and worse as days advanced, and one long hill, clay coated, gave the trucks an inch by inch battle that taxed them almost to their limit.

And they went over the crest unassisted.

The long day's grind put the train behind its running time, so that when dusk settled over the hills the caravan was at least twenty miles from its night control at Reedsburg, and there laid ahead of it a stretch of roadway in the making over which natives predicted without reservation the trucks could not possibly go.

"We'll go," said Trainmaster Scott, and go they did, but the grind through those few miles of road will not soon be forgotten by the men who handled the trucks.

The preliminary grading of the road had left the wide fairway absolutely without surfacing or packing of any kind, and the rains of the week had left the earth soaked like a sponge. Into this mire the pilot car plunged, and the big vans followed like a procession of lumbering elephants. One by one they ground their way through, but each succeeding truck left the road in worse condition, so that by the time the three service trucks followed through, heavily laden with tires and fuel, they faced a veritable quagmire.

In trying to choose easier going along a slightly raised portion of the road the Master truck used as a Firestone tire service car edged too close to the bank, and in an instant had slipped over and landed on its left side, driver and service man in a heap in the cab, but uninjured, luckily.

Hard work on the part of those drivers who were nearest soon put the truck on its wheels again, and it started off under its own power with no other injury than a broken glass in the cab.

The big Sterling truck used by the Goodyear company as a service truck came through last, and with the caravan

A Contrast in Wisconsin Country Roads

One so muddy and slippery that eight miles an hour was fast, the other of concrete and good for twenty miles an hour without effort

C. G. Martin, who took the Signal truck through.

P. W. Gibbs, road engineer of the Maxwell Motor Sales Corp.

L. A. Wood, factory representative of the Republic Motor Truck Company.

Capt. H. C. Mitchell, detailed by War Dept. to report on pneumatic tires.

R. G. Wine, District Sales Manager Winther Motor Truck Co.

Louis Hallowell, of the Atterbury Motor Car Company.

once more intact, the go ahead whistle sent the line on its way to night control, eighteen miles away, reached at one o'clock in the morning.

This was the big adventure of the trip, the only night running, and it was of a nature to show up any mechanical defect in any truck in the caravan. Far from uncovering any defect in the trucks, it only proved the excellence of their design and construction, and early the next morning the trucks were under way again, with not a single mechanical adjustment or replacement after the terrific grinding and wrenching and twisting of the night before.

The final weeks of the tour found a rather apathetic attitude on the part of some of the cities through which the trucks went, and an unexplainable dearth of interest on the part of truck dealers in the territory, the very men who should have been most interested.

Minneapolis furnished a wonderful reception to the caravan, with a banquet for the tourists and for dealers from the surrounding territory at which nearly 500 sat down. A. R. Kroh, director of the trip, was the principal speaker, and he thrilled his auditors with his account of what the trucks had accomplished through the Dakotas and Iowa, and what they hoped to do in Minnesota and Wisconsin. Dealers who attended the banquet were given a new conception of what they could do in selling motor trucks and sales results have already begun to be felt through the Twin City territory as a result of the caravan's visit.

Some of the "easier going" along the muddy roads.

When Truckmaster Scott gave the command to put on chains.

Small meetings characterized most of the Wisconsin stops, Madison, the capital, for some unknown reason, reaching the zero mark in interest on the part of local truck dealers.

Milwaukee furnished a fitting climax to the tour on Friday evening, Oct. 3, when over 300 dealers and factory representatives sat down to a banquet at the Milwaukee Athletic Club in honor of the men who brought the trucks through. John F. Tracy, president of the National Association of Motor Truck Sales Managers, who sponsored the trip, presided, and spoke feelingly of the splendid record made by the men and the trucks. A. R. Kroh also spoke at length on what the tour had accomplished and other speakers were: Senator Roy P. Wilcox, of Eau Claire; Frank G. Cannon, Wisconsin's good roads secretary, and President A. T. Van Scoy, of the Milwaukee Association of Commerce.

On the following day President Tracy tendered the crews of the truck a luncheon at the Wisconsin Club, at which time each man was presented with a handsome bronze watch fob, struck off in commemoration of this epoch making tour. The men in the caravan at this time presented Mr. Kroh with a beautiful watch, and Truckmaster Scott and C. P. Smith, who acted as advance agent in charge of hotel accommodations, were each remembered with appropriate gifts.

A parade featured the last day, and at its conclusion the caravan disbanded for the last time and the tour became history.

Elkin Chandler, of the Service Motor Truck Co. He also acted as postmaster.

H. V. Evans, of the advertising department of Gramm-Bernstein Motor Truck Co.

Harvey C. Luckett, factory representative Master Trucks., Inc.

Willliam E. Kelcey, factory representative Atterbury Motor Car Company.

Charles L. Shedd, factory representative of Bethlehem Motors Corporation.

R. S. Wilson, assistant sales manager, in charge of tire sales, Goodyear Company.

Glenn W. Poyzer, service engineer, Selden Motor Vehicle Co.

B. W. Metts, representative, Chicago, District, Goodyear.

R. H. Crouse, who took the Atlas Truck through.

J. W. Kelley, factory representative, Sterling Motor Truck Co.

C. C. Gwynne, factory representative, Clyde Cars Co.

M. Muller, who represented the Vacuum Oil Co. on the trip.

In a statement to the COMMERCIAL CAR JOURNAL after the conclusion of the trip, A. R. Kroh, who had charge of the caravan on the road and who spoke at every gathering throughout the tour, spoke as follows:

"We have secured a gasoline consumption record differing from any previously secured, for we had trucks from ¾ ton to 2½ ton capacity, and we have an exact record of the gas given each job each day and a complete record of the weight and kind of pay load hauled, kinds of roads covered, the mileage, and whether on highways or on soft fields, for every single day of two solid months.

"We have proven beyond a question that even with the present highways schedule time can be maintained satisfactorily from a commercial standpoint. For on only two days were we off schedule for more than a few moments, and on one of these days we covered 102 miles over roads that were mostly over wet, slippery hills, with grades ranging from level to 18 per cent. And twelve miles of this travel was through almost constant mud, where front axles and differentials dragged and the passenger cars had to be towed out by the trucks.

"We have proven that this schedule could be kept, and the hundreds of tons of freight hauled over roads seemingly impassable, on pneumatic tires when no solid tired truck would even have started.

"We have proven the practicability of pneumatic tires on heavy duty trucks, for the entire distance of about 3600 miles was covered with only nine punctures and without a single blowout. And most of the punctures were avoidable, as they were due to nails picked up on vacant lots where the trucks were parked at night.

"While we do not know, of course, what report has been made to the war and navy departments by Major Lubeck, Capt. Mitchell and Lieut. Wilson, who were ordered from Washington to accompany the tour and check complete performance, road conditions, success or failure of pneumatic tires, etc., we feel safe in saying their report alone, if available, would be of inestimable value to the industry, and would settle a lot of truck and tire performance questions previously considered debatable.

"We left Chicago on time and finished in Milwaukee ahead of time. Every one of the eighteen trucks which started from Chicago finished in Milwaukee with the same factory man behind the wheel. Carbon was cleaned from only one engine, and that on one of the service trucks which had already seen five years of service, and which entered the tour without any special preparation.

"Not a single bearing of any description was burned out on the entire trip, and only one job had magneto trouble. Every truck equipped with electric lighting outfit finished with them in good condition. Only one crankcase was taken down for adjustments on the entire trip.

"We found that none of the bodies on the trucks really fulfilled expectations as an all 'round body for farm purposes, as they did not combine ideal grain and hay carrying facilities by any means. This type seems yet to be attained.

Two trucks skidded into the ditch at once in Wisconsin.

At the top of the worst hill on the trip. Very steep and slimy, the trucks slipped from side to side and fought their way to the top inch by inch.

W. M. Elliott, factory representative Hawk-eye Truck Co.

Alexander Gray, sales manager Diamond T Motor Car Co.

C. P. Smith, of the Signal Truck Co., who arranged for hotels.

B. W. Elgin, factory representative of the Firestone Co.

J. J. Hegeman, Milwaukee, of Firestone Tire & Rubber Co.

Matt Korshin, district sales mgr. Selden Motor Sales Corp.

"We have proven things regarding power, transmission, gear reductions, bodies, etc., that will be of inestimable value not only to the manufacturers represented on this tour, but to the American farmer truck buyer, who will be saved millions of dollars in future years through the betterment of truck design pointed out by the lessons of this trip.

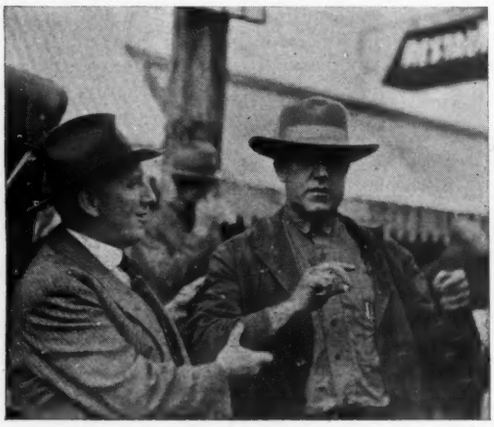
"We have proven the economy to farmers of commercial cars over horses and wagons not only in saving of time, but in point of actual costs exclusive of time required to do a given amount of hauling.

"We have proven that the motor truck is the one piece of machinery to which the nation can look for help in this after war period of expansion and readjustment.

"We have proven to the manufacturers participating in this trip the fallacy of begging for buyers for motor trucks in the large cities and towns when there is so fertile a field among farmers, which should be given attention from a patriotic standpoint if from no other.

"The manufacturers' representatives on this tour have seen farmers come distances of as high as 75 miles to learn the truth about modern motor trucks. They have seen these farmers give perfect attention to lectures and remain in some instances until after midnight asking intelligent questions, freely admitting their desperate plight as a result of farm labor.

"We have proven all our past arguments as to the potential market for motor trucks in the farm field, a market so great that the point of saturation will not be seen by any man now actively interested in motor truck production.



Above: Carl Stubig, who traveled ahead of the caravan arranging newspaper publicity. His work was of the highest order and he secured pages of the most valuable kind of motor truck publicity.

Left: President Tracy, of the National Association of Motor Truck Sales Managers, and A. H. Kroh, who took the tour through, at Waukesha, on the last lap of the journey.

Right: Harold Hoyt, who drove the Harley-Davidson courier motor cycle and O. A. Boehmer, who handled the daily truck reports.

"We have brought together dealer, distributor and banker into closer and more sympathetic working organization in many cities, which will result in better, sounder merchandising of trucks.

"We have taken ten thousand feet of moving pictures, to prove by actual photography what we have done on this trip.

"We have kept a complete record of gas, oil, repairs, roads, loads, and haulage time for the entire tour. Each truck has done more on this tour than a farmer would require it to do in two years. We have done all any farmer asked us to do, and many things he swore we could not do.

"We have told audiences of from 100 to 20,000 people the truth about modern motor trucks and then, before their own eyes, have proved our statements with the trucks on their own kind of haulage problems.

"We have been welcomed by governors, civic bodies, mayors, auto trade associations, preachers, teachers, and best of all by farmers, who would stand at closest attention nodding assent and agreement to our story and then follow us in crowds to the fields to witness the proof in our demonstration hauling.

"I do not think it is any exaggeration to state that over half a million dollars' worth of space in newspapers, trade journals and farm publications has been devoted to proclaiming the tour and its results, and the end is not yet, by a long

"Eighteen motor trucks, manned by eighty-two men, who have worked together as a single unit for two months, jumping to the wheel and from it at the tourmaster's whistle, broke ranks at Milwaukee on Oct. 4th to go to all parts of the nation with the big truths brought into the light by this tour. And no pessimist can talk down the truths which this trip has proved."

That the development tour has already begun to get tangible results is shown by reports that are beginning to seep into headquarters.

Within 48 hours of the time the caravan left Bismarck, N. D., the Maxwell

Yes, there were wives on the trip toward the end. Mrs. B. W. Elgin and Mrs. Harvey Luckett joined the caravan. Mrs. Luckett adopted a china "chee-ild" enroute, which was immediately christened "Onyx."

At Reedsburg the caravan participated in a big home-coming celebration, and were part of an elaborate parade

truck agency sold four trucks to farmers, men who had not even been prospects before they saw the real demonstration of what trucks could do when the tour came through.

At Des Moines the Winther agents found interest in trucks growing so fast after the caravan departed that they wired for a carload of Winthers to be shipped by express, which was done.

At Fargo, C. A. Wheelock sold three White trucks, pneumatically equipped, shortly after the caravan passed through, his farmer prospects convinced from what they had witnessed that the time had come for them to buy.

Truck manufacturers report new dealers and an awakening interest that will mean wonderful sales within the next few months.

Records of the individual trucks, day by day, are in the hands of Director General J. F. Sturm, whose unflagging energy and intelligent direction had much to do with the success of the tour, and these records will be collated and analyzed and will then be available for members of the association in guiding them in future truck design. Properly arranged they will be of great value to

The photographs taken during the trip, both stills and moving pictures, will be used both by the individual companies and by organizations in furthering education in the use of motor trucks in efficient hauling in cities and on the farms, and there has been started, through the splendid demonstrations carried out on the tour, by the lectures and by the far-flung publicity in newspapers, magazines and trade press, a wave of intense interest in the subject of motor trucks and motor truck transportation that should get remarkable results in the years to come.

The motor truck manufacturers who participated in the tour are profoundly pleased with the results achieved.

Motor Truck Manufacturers and Dealers Should Cash-in on the National and Other Tours

Hundreds of Thousands of Dollars Have Been Spent in Putting the Tours Across in Grand Style, Newspapers Have Been Filled With Motor Truck Publicity as Never Before. Now is the Time to Get Sales Started in the Tour Territory. Some Suggestions. Farmers Are in an Eagerly Receptive Mood

By A. V. COMINGS

THE old admonition to "strike while the iron is hot," never meant more to motor truck manufacturers and dealers than it does today. The completion of the 4000 mile national demonstration tour, together with the finish of several smaller local tours throughout the country, has left the minds of potential truck users throughout the United States, both in the rural and in the city districts, like soft wax, ready to receive further impressions as to the efficiency and practicability of the motor truck in their particular field. They are frankly interested in the subject. It is not exaggerating to say that several hundred thousand dollars have been spent in motor truck propaganda. Newspapers from coast to coast have carried thousands of columns of motor truck publicity, in special editions and under big, black, across-the-page heads, publicity that could not have been purchased with mere money. Trade magazines have pounded the story home to the dealers all over the country.

The country is, as a whole, in that state of mind induced in the individual prospect by a truck salesman who has used every persuasion known to his art in bringing the prospect up to the point of putting his name on the dotted line.

Now, what are the motor truck manufacturers and dealers going to do to get the public's name on the dotted line, figuratively speaking? How are they going to cash in on this immense expenditure of time and money and effort? How are they going to use the ammunition they have manufactured at great cost, to smash through the sales resistance fortresses and capture the splendid business that assuredly awaits their well organized coming?

One of the first things a manufacturer should do to cash in on the national tour is to send out over the route traversed by the truck caravan the very best sales organizer he has or can get. He should be a high priced man, a man who can talk equally well to banker, prospective dealer or prospective truck buyer. For this man is going to find it mighty hard to uncover good dealers in the territory. There are already a few real dealers, but there are a lot more who are not worthy the name, men who have no idea of the fundamentals underlying truck sales and service. They are the kind who take an agency, get a few trucks on hand and then, not having the sales ability to sell them, dispose of them for almost any price to keep them moving. This is particularly an evil in the western territory, where there is not yet sufficient volume of sales to warrant any dealer taking on a really large contract. Of this type one of the leading automobile men in Grand Forks recently said to me:

"I would like to sell trucks, would be only too glad to take on a line, but at present there is no money in it because we would have to go into competition with several dealers who sell their trucks practically at cost, making no money themselves, and making it impossible for legitimate dealers who refuse to do business without a profit to make money. I will not handle trucks without making a profit on their sale, and until that time arrives I am not going to be talked into selling them. I know what the present market is in this territory. It is comparatively small, but it will not be long before it will be large enough to warrant real dealers getting into the business. Then I will sell trucks."

The race for dealers has been so keen among manufacturers that the type of men is not always considered in placing agencies. However, as time goes on this is going to count more, and there is a growing feeling among the better type of manufacturers that it is better to have no representative in a territory than to have a dealer who is a price cutter and a business disorganizer. He may sell trucks for a time, but almost without exception that type of dealer is expensive to a company in the long run. From the very nature of his methods he is unable to care for his truck customers as he should, and the truck generally gets a "black eye" from which it is a long time recovering.

The sales organizer who goes out through the truck tour territory should have in his possession all the available data collected on the tour, and this is a large amount. It is my understanding that members of the National Association of Motor Truck Sales Managers will be furnished with this data, and they should, by all means, make use of it.

Their representatives should have the names of the committees in each city that co-operated to make the tour a success, for they have in every instance been more enthusiastic after the caravan arrived than they were before the show, as they saw what a big, broad idea was being put over. They are able and willing to help the truck companies in getting proper representation along the route, and as these committees consisted of bankers, city officials, prominent business men, etc., they are in a position to assist manufacturers' agents in getting the proper connections locally. Previous to this tour a sales organizer

DEVILS LAKE JOURNAL, TUESDAY, EVENING, SEPT. 4, 1919.

THE MOTOR TRUCK TRAIN IS HERE

Demonstrations Begin Early in The Morning and Continue until Saturday Night---TRAIN LEAVES SUNDAY NOON

19 Big Farm Trucks 28-Piece Naval Band--IT'S TWO BIG DAYS

MORNING EDITION. GRAND FORKS HERALD, SUNDAY, SEPTEMBER 7, 1919. PAGE NINE.

NATIONAL MOTOR TRUCK CARAVAN TO ARRIVE IN GRAND FORKS TUESDAY EVENING

GREAT MESSAGE FROM OFFICIALS OF TRUCK TOUR

No Group Of Men Ever Brought More Important Message, Is Said

Truck Is Destined To Revolutionize Transportation They Declare.

K ROUTE UGH CITY ANNOUNCED

TRUCKS HAULING GRAIN

Entering the city on Third street, down Third to Dekers avenue, then to East Grand Forks and return to Third street, down Third to Bruce avenue, on Bruce to Fourth street, South to University avenue and

ing machine on the trucks and the threshed grain taken to town in other trucks. This demonstration will be staged on the Red Wing farm, four miles south of town, on Wednesday afternoon.

were made yesterday by the advance committee, which arrived Saturday afternoon in a car furnished by the Hawkeye Motor Truck company of Sioux City.

At Lakota Today.

The tourists are due at Lakota this morning at 9:30 and will be met by

CEDAR RAPIDS SUNDAY REPUBLICAN

SECOND SECTION. CEDAR RAPIDS, IOWA, SUNDAY MORNING, AUGUST 10, 1919

GREAT MOTOR TRUCK CARAVAN TARRIES IN THIS CITY : IS WELL ENTERTAINED

GREAT DEMONSTRATION OF BIG MOTOR TRUCKS FOR AMERICAN PUBLIC

Traveling Thru Three Hundred Towns and Villages in Six States

SHOWING TO UPWARDS OF MILLION AND HALF CITIZENS

Reach Cedar Rapids Ahead of Schedule Time and Will Reach Milwaukee October 4, Exactly on Sch... Pleased With Entert...

SIDE LIGHTS ON TRIP AND SOME OF THE TRIPPERS

A. R. Kroh in charge of the tour and lecturer with the caravan, tells a rather humorous story on Iowa and Kansas.

"I was in Kansas one year," he said, "when I met a farmer who was rather down in the mouth because there had been no rain and his crops and pastures were drying up. I told him to cheer up, whereupon he said he would soon have rain.

"Rain in three months," he replied, "I should say not. There are never more than three months from Iowa."

The Navy Band is stimulating recruiting and each member of the band has information concerning officers' rates, he can be obtained from the navy. Young

erations on the tour. Lieut. P. M. Watson, in charge, recently filled the company completely over in his uniforms. Each wore them free from dust. The band rode in the first three trucks. At Elkader, twenty-five society girls motored with their cars and called for the band when they arrived. Automobiles over the city, under the chaperonage of the Y. W. C. A. Community Service, were decked with a canopy and the band in the tent town in Elkader.

A. R. Monroe, bandmaster of the tour, does not resemble in the least

tional distinction on the tour. His company is sending out to dealers four mules in the course of the tour. A letter requests that the animals be used to smoke them first class. The brand is good enough for me, if it will and if convinced that it is, I am to smoke them and give the same to my friends." Hallowell and the cigars to Mr. Hallowell and in the presence of Hallowell. Hallowell, a splendid speaker and has delivered some inspiring talks to crowds

GOVERNOR MOORE AND CHIEF KROH GIVE TALKS AT LUNCHEON

Governor Moore Tells Need of Patriotic Citizenship at This Time

THE OBJECT OF OUSAND MILE TOUR

d States Co-operating With the for Greater Efficiency, More Food ring

EXTRA

This Special Edition is gotten out by the Herald-Dispatch in the Interest of the Farming Community and the Good Roads Movement.

Sleepy Eye Herald-Dispatch

A Good Paper in a Good Town, that is Boosting for You, the City and the County

SPECIAL SLEEPY EYE, MINNESOTA MONDAY, SEPTEMBER 22, 1919. SPECIAL

MOTOR TRUCK CARAVAN HERE

Hundreds of Farmers Here Saturday and Sunday to See Motor Trucks on Display

TRUCKS GAVE SEVERAL DEMONSTRATIONS

It was the desire of the promoters of the Truck Tour to make as many demonstrations as possible, to convince the farmers of the usefulness of the truck on the farm. They selected tasks to perform and the harder the jobs the better they liked it. They were called upon to give only four demonstrations here and they were all considered very easy ones.

The Stevlour Truck which was represented by Mr. J. W. Kelley took a load of coal from the Farmers' Elevator to the Albin Creamery a distance of ten miles from Sleepy Eye. The load weighed 5180 lbs., and the time consumed in loading, unloading,

ATTORNEY HAUSER WECOMES VISITORS IN A ROUSING SPEECH—INSTRUCTIVE TALKS BY CAPT. MITCHELL AND HARVEY LUCKETT OF THE TOURISTS

The Efficiency of the Tractor and Motor Trucks on the Farm Demonstrated—The Government Is Back of the Project and Encourages Farmers to Conserve Time as an Economic Measure—Value of Trucks Was Shown During the War.

The Motor Truck Caravan, travel... and which now is ... to five times greater. They are operated 18 to 24 hours a day while a speaker but if he has anything on Mr. Luckett we are of the opinion he has to "go some." Mr. Luckett's talk was full of good things and ev...

Kroh is reputed to be a most able horse is good for from 6 to 8 hours. They were so practicable that when ... the U. S. entered the world war they ... a speech." He

TRUCK OWNERS PLEASED WITH THEIR BUYS

The auto truck is no longer an experiment. There is no argument against it as an efficient and useful unit to aid man in the creation of food, property and wealth. Right here in Sleepy Eye it has been forcibly brought to our minds that the truck can do four to five times the work of an ordinary team and do it faster and cheaper. John Ebenhoh has been assembling a good truck and he has sold a number and his experience has been more than satisfactory. At present his two ton truck is doing a lot of hauling. For instance last week he hauled four loads of shelled corn in one day for Mr. Keyser on the old J. J. Bertrand farm in Home. A load of high priced hogs was carried to Redwood and with the hooling for C. P. Cutting and Jim Case, a load to Gibbon and a log of

The Daily Press Gave the Tour Lots of Publicity

went into a town a stranger. With the introduction provided for him by this tour and its result in linking up the truck business with other lines in every city it passed through, he goes into a city with excellent passports, enabling him to make the very best of connections, if there are dealer possibilities in the place.

While on this subject of dealers, it would be well for manufacturers to realize that first-class truck dealers are not all developed from the trade. A manufacturer's representative should be on the lookout for men of proved sales and business ability in other lines who can be induced to enter the truck business. Some very notable successes have been made by just this type of business man.

Another bit of data the manufacturer's traveling representative should have is the demonstration figures on each town he visits. He should have a list of the loads hauled by trucks from the caravan while they were in that vicinity, figures on the mileage and costs, so that he could show agency prospects what the hauling possibilities are in the territory.

Photographs, of course, of the work done on the tour should be provided the agent, and all other data which has been collected and which will be collated and arranged for use very shortly.

Personally, I think the winter should be spent by every manufacturer represented on the tour in keeping up the interest that was aroused by the caravan, for the seed has been well sown, and only needs intelligent attention to make it bear rich fruit.

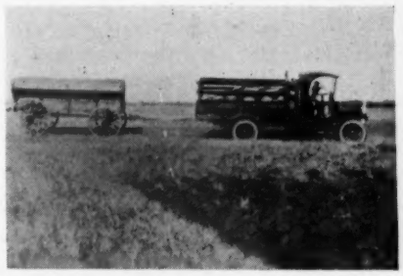
Service Must be Carefully Considered

The question of truck service through new dealer territory is rather a serious one, especially in those western states where distances are great and trucks will necessarily be scattered. Many a good dealer prospect has been scared away from the business through contemplating the investment he is asked to make to render proper service. Some of the truck companies are now handling this problem by having parts carried in stock at convenient distribution points by distributors who handle same on a percentage basis, this method calling for no big investment on his part. It would seem that several trucks with sufficient representation might combine on service depots in the more remote sections, this method cutting down cost to them, yet rendering the best of service to their truck throughout the section.

Service among the farmers of Iowa, the Dakotas and Minnesota is an all important matter, and one frequently put up to the tour management by questioning farmers. They do not want their trucks out of commission for several days at a time while they await repairs from Chicago, or St. Paul, or some other city a long way off. They want to be assured that if they buy trucks they will be given quick service on parts, for they have most of them gone through this mill with their automobiles, and you will find in that country that farmers drive the cars on which they can get quick service in case of trouble. They have learned the lesson.

Farmers Interested in Trailers

Another subject on which a sales representative must be prepared to talk concerns the ability of his truck to handle trailer loads. Everywhere on the tour



Hauling 8470 Pounds of Potatoes to Town for S. A. Vogel, at Fargo. Farmers Were Eager for Trailer Demonstrations

farmers asked this question, and there were many districts where the use of a trailer or trailers with trucks would be entirely feasible and would assist in introducing trucks at an early day.

In addition to going after dealer representation in the tour territory, many manufacturers are going after individual sales, and judging from the experience of dealers and distributors who have followed up other tours, there is excellent reason to expect many individual sales as a direct result of the tour's passing. There is everything in favor of truck sales through the tour territory. Nothing has ever been done that has brought home so decidedly to the possible user the actual hauling possibilities of pneumatic tired motor trucks. He was fed on motor truck hauling through his local papers for several weeks before the caravan arrived. He went to town and saw the trucks, saw them haul the very things he hauls from his own farm, and realized that no promises had been made that were not more than fulfilled. He sized up the trucks critically as he would size up a new farm horse, measured their strength, their speed, their stamina, though he probably didn't call it by that name. And he didn't find a weak spot in them. He saw them haul loads in his ploughed fields, and over muddy roads, that his own horses couldn't haul. He wasn't just told they could do it; he saw it done with his own eyes.

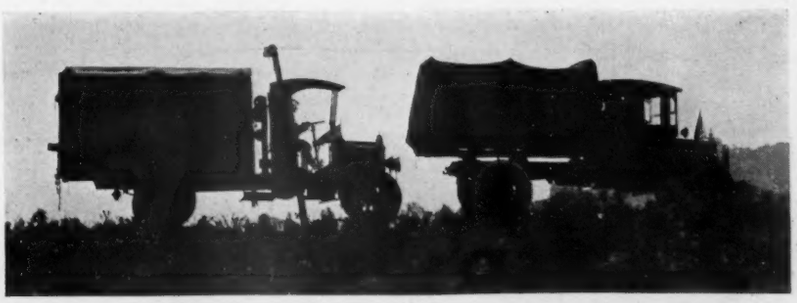
And they've been talking over these performances, and telling about them to farmers who weren't in the city, until the story of the truck tour and what the trucks did has been pretty thoroughly spread all over the Middle West.

Individual prospects are ripe for the picking. Motor truck manufacturers will be very shortsighted indeed if they don't go after them with letters, with literature bearing on the work done in their own vicinity and with able salesmen who will take their orders.

Thousands of feet of moving picture film, much of it showing the trucks doing heavy work for western farmers, was taken during the tour. There will be hundreds of farmers' meetings out through the tour territory this winter, Grange meetings, extension meetings, all manner of meetings. It would be shortsighted indeed if the manufacturers overlook the opportunity presented them by these gatherings, and do not send this film out to be shown at every possible opportunity. This could be done either through their own agency, or probably by arranging for it through various agricultural college extension bureaus. There is hardly a state nowadays whose state agricultural college would not jump at the chance of showing these films broadcast, in their efforts to make the farmer realize how he can better his conditions on the farm. That's their business, and they are glad of this kind of ammunition.

To one who has watched, in town after town, the hundreds of farmers gathered in each to see the truck caravans, who has studied their strained, interested faces, and who has watched the eagerness with which they grasped at every bit of information as to what motor trucks might do for them, the apathy of a great many dealers and of some manufacturers toward cashing in on what has been done is beyond understanding. Those crowds were not idle curiosity seekers. One had only to look in the "personal" columns of the small town papers to realize that. For invariably they carried item after item, telling of this farmer and that farmer, from some place five miles away, or twenty, who had come over "to see the trucks." They didn't come for the pleasure of it; they came to be shown. And they were shown, beyond argument.

Now get busy, you manufacturers and you dealers. You've made the big investment; you've been good sports in putting this thing across. Now cash in on it, put the motor truck where it belongs on the farms, "strike while the iron is hot," and strike with all the brains you've got in your organization.



No Concerted Action by States to Keep Roads Open This Winter

Dealer Should Work for Legislation That Will Put Responsibility on the State to Keep Main Roads Open the Entire Year

By C. P. SHATTUCK

MOTOR truck operators engaged in Highway Motor Transportation, and particularly those companies running what is commonly termed "inter-city service," and which involves traveling long distances, are much concerned as to the plans of the various States for keeping the main or trunk lines open during the coming winter. It was hoped that the plans consummated last fall and during the war period would be effective in 1919-20, but with few exceptions the States or their highway departments do not consider it essential to meet the snow problem other than in the conventional manner.

How State Laws Deal With Problem

With very few exceptions the laws ot the various States make their cities and towns responsible for relieving conditions brought about by snow, and where the law is definite in fixing the rsponsibility its provisions are not very effectively enforced. In other words, the towns and cities are supposed to keep the roads open for traffic during the winter months, but, as previously pointed out, very few do this. It appears to be a case of passing the buck. Practically no attempt is made to keep the State roads open and those States formulating plans as a war measure have, with one or two exceptions, virtually relapsed into a state of indifference, despite the fact that highway engineers can supply concrete evidence of the damage resulting from the use of snow filled roads not cleared of the snow.

Advocates Removal of Snow

Rhode Island is a typical example of how the States handle the snow problem, but efforts are being made to modify the laws, to have the highway department assume the responsibility of taking care of snow conditions. Irving W. Patterson, chief engineer of the State Board of Public Roads of Rhode Island, believes that it is the duty of the States to meet the snow problem, and in a report he says:

"Under the provisions of Section 6, Chapter 84, the separate towns and cities are responsible for relieving the conditions brought about by accumulations of snow and ice upon the State roads within their respective boundaries. The law is very definite in fixing the responsibility for the meeting of snow conditions upon State highways, but the provisions of the law in this regard have not been carried out effectively in past years. There has been in fact practically no attempt made by the cities and towns to keep the State roads open for traffic during the winter months. In view of the great importance of highways transport in solving problems of direct importance to the post war period, too much importance cannot be placed upon the keeping of highways open during the entire year.

Snow an Impediment to Traffic

"It may be sufficient upon certain roads remotely located to open the roads after heavy snows only sufficiently to enable light vehicles to get through, but on our main trunk lines it is very necessary to meet the snow problem in such manner that the normal travel to which the road is subjected will not be interfered with seriously. This problem is now so serious that it must be met squarely. We can no longer maintain a careless attitude toward the subject of meeting snow conditions; we must no longer look upon snow as a necessary impediment to traffic; and we must not sit by complacently and allow traffic to fight its way through drifts or of necessity cease until nature takes care of the situation.

"If there appears no certainty that the present provisions of our law in regard to snow removal upon the highways cannot be made effective, modifications of our law in this regard are in order. We feel that good results under our existing law will not be forthcoming. Towns and cities will not take the proper interest or spend the necessary funds to meet the snow problem satisfactorily upon State roads. It appears probable that roads under the full control of towns and cities will receive preference in the programs of snow removal carried out by towns and cities, notwithstanding the fact that in the great majority of cases the State roads are the most important roads to be kept open.

Responsibility Up to State

"It appears very logical to assume that the responsibility for taking care of snow conditions upon State roads should be borne by the State. Dual responsibility over State highways does not appear desirable, but there is dual responsibility now, the State taking care of maintenance and towns and cities taking care of snow conditions. If the State were to assume the responsibility for the meeting of snow conditions, it is not to be presumed that all State roads would receive the same attention in the matter of snow removal or involve the same expense. Special attention naturally would be paid to the roads carrying the heaviest travel. More extensive work would be necessary upon those lines subjected to a heavy motor truck traffic than upon those lines carrying in the winter months only a very light traffic, composed largely of horse drawn vehicles. The location of roads would also effect very greatly the expense involved in snow removal. The northern section of our State has normally a much greater snow fall than does the southern section and would, therefore, demand a greater expenditure for meeting snow conditions.

The Economical Aspect

"The removal of snow after it falls is only one aspect of the problem of meeting snow conditions. The prevention of drifting by the erection of snow fences, by changes in fences and by cutting brush which affect the currents of air and result in the causing of drifts to form, are of the greatest importance. The drivers of vehicles could aid materially in helping out the situation when drifting does not occur and where the depth of snow does not involve a serious hindrance to traffic by avoiding traveling in one track. The driving in one track, of course, develops ruts which may freeze and, therefore, cause the greatest difficulty in turning out. The damage to road surfaces by this tracking is very apparent, especially when thawing occurs and the ruts become filled with water. Careful consideration should be given this subject of meeting the snow problem. It is important that the main highways be kept open throughout the winter."

Shirk Responsibility

Mr. Patterson's remarks as to the dual responsibility not being desirable are quite correct. The writer drove over the main or trunk lines in Rhode Island recently and talked with a number of those having to do with the affairs of the towns on the snow removal subject. Several on the main or heavily traveled highways had absolutely no equipment for removing snow and several intimated that any money spent breaking open drifts would be for the benefit of the residents of the towns. The majority believed that it was up to the State. Some said if the State provided the equipment and money they would do the work. Evidently such a plan would fit

in well with the town policies, politically and otherwise. In practically every instance the suggestion that keeping the roads open for trucks would be a benefit to the public failed to arouse any interest. The average town official or those directing its policies are not broad minded enough to realize that the cost of transportation is borne by the consumer. That similar conditions obtain in other States is evident from the statements of their highway commissioners, etc., and which are appended herewith:

Maine

Paul D. Sargent, chief engineer, State Highway Commission, says that there are no plans for keeping the State highways free from snow during the coming winter, that it is the duty of the selectmen of the various towns to see that the roads are kept open.

New Hampshire

The commissioner of the highway department states that he is not making any plans for keeping the main highways open during the winter months, that is wholly up to the towns through which the road passes.

Vermont

Vermont has no plans nor are any contemplated to handle the question of snow removal from its highways. No bills have been passed by the legislature contemplating the removal of snow by the State highway department or by the towns and cities. The general method used in Vermont is to roll the snow and keep on top of it with winter traffic. Whenever it becomes too deep the snow is shoveled or plowed out, but this work is done under the direction of the selectmen of the towns or similar officials in the villages and cities.

New York

The Commission of Highways states that inasmuch as no special legislation was enacted at the last session providing for the removal of snow, and there remains no balance from the special appropriation made for the removal of snow on certain traffic highways as a war measure, this work will be up to the different towns. Every town has a fund set aside, a snow fund, and the amount varies. The expenditures are made at the discretion of the town authorities.

Connecticut

Connecticut affords a shining example of a progressive and public spirited commonwealth, for not only will its highway department keep the roads open for traffic the coming winter but it has added 20 snow plows to its already extensive equipment. This State was the pioneer in solving the snow problem and the work of its highway department during the war period was appreciated by the Government, for it is said that the greater part of certain war equipment was produced in Connecticut. Inasmuch as the snow removal methods of this State were fully described in the COMMERCIAL CAR JOURNAL a year ago and in 1917, further comment is not necessary. It may be stated, however, that the high standard maintained in the past will be maintained in 1919-20.

A number of new roads, including connecting links, have been constructed during the spring and summer and construction of 50 miles is under way. The new highways will be 22 ft. wide and constructed to withstand heavy traffic. Good use is being made of the trucks supplied by the Government and the highway department hopes to receive another allotment. Among the connecting roads or links are: Groton-Norwich, New Milford-Litchfield, Cheshire-New Haven, Simsbury-Granby, Farmington-Plainville, and Bristol-Thomaston-Waterbury.

Kansas

The road work in Kansas is done by the counties. Almost all of the automobile fund, which this year amounted to $962,697, is to be used as a drag fund. The drag fund is used for keeping the roads in good condition, by dragging the roads after rains in the open season and removing snow during the winter time.

The legislature also passed a law last winter, requiring special attention to be given all mail routes.

Various counties have numerous devices for the removal of snow. Many use a whirling plow in front of a tractor or automobile.

Minnesota

This state intends to make provision for keeping the main lines of traffic open during the winter, but does not intend to make any special arrangement at this time to obtain machinery to do the work.

Missouri

No provision was made in the laws passed at the recent sessions of the Legislature for keeping roads free from snow in the winter, but $400,000 was appropriated for dragging the roads for two years. With this money the roads are usually dragged free of snow. Each county under the law does its own dragging, issuing requisitions on the State Highway Department for the work done.

Pennsylvania

The State Highway Department of Pennsylvania proposes keeping open, during the coming winter, the main-traveled highways of this state. They will give particular attention to the Lincoln Highway over which passes the major portion of the east and west bound traffic.

Rhode Island

Under the provisions of the State Highway Law, local authorities are wholly responsible for the keeping of state roads open during the winter months. It is impossible, therefore, for this department to make any plans for this work.

West Virginia

Construction work in this state closes about the first of December and opens again about the first of April. On account of the clay nature of the soil in this state, it is impossible to keep the unimproved roads open for motor traffic during the winter.

New Jersey

The State Highway Commission has not made any definite arrangements for keeping the State Highway Routes clear of snow during the coming winter. It is believed such an arrangement will be made to keep the most important lines clear at all times.

Illinois

The State has made no special provision for keeping its roads open for motor travel during the winter; in fact, the southern half of Illinois is seldom troubled by snow drifts. In northern Illinois, they frequently have drifts which delay traffic for a few weeks. Heretofore, there have been no through state roads and, therefore, the State would not feel justified in cleaning snow from the isolated sections of state roads which have been improved.

It is doubtful, on account of the trouble in securing materials, whether they will be able to complete any through road this fall, where it will be necessary to inaugurate any system of keeping the roads open throughout the winter. As soon as through roads are completed, work will be organized in such a way as to keep them open at all times.

Nebraska

No special plans have been made to date, regarding snow removal. However, after January 1, 1920, each county will be required to maintain the whole state highway system lying within the county and to do so under supervision of the Department of Public Works. It is hoped that, by that time, an organization will be completed for patrol maintenance. Equipment will be secured for such maintenance and the snow removal problem will be cared for in this manner. The department has a design for a snow plow under consideration at the present time and as soon as the organization is completed, they will be ready for use. This work will probably not be taken care of until the winter of 1920 and 1921.

Wisconsin

Provision was made at the last legislature so that any county might vote taxes for the purpose of keeping its main highways open during the winter season. Action on this matter will be taken by the county boards at the November sessions and cannot be forecast at this time.

The State Highway Commission, if time and its forces permit, will undoubtedly do some experimental work along these lines, inasmuch as it now has the use of a large number of motor trucks received from the Federal Government.

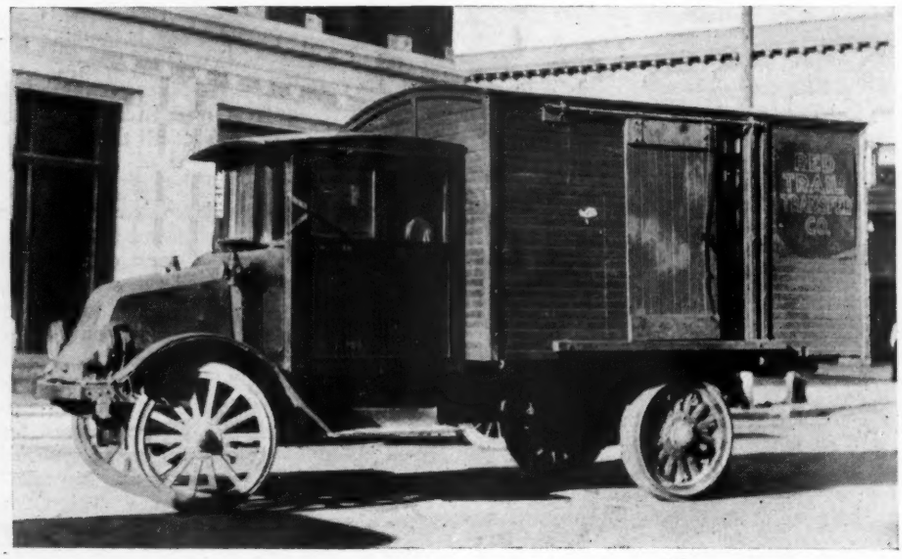
How the Dealer Can Aid

From the reports of the various highway authorities of the States mentioned it is obvious that no concerted effort will be made, at least this winter, to keep the highways open should the average winter conditions obtain. Not even with the introduction of bills advocating the control of the snow removal work by the highway departments or commissions will practical results be obtained, for in the average State the country representatives, and they invariably control, will not give support to the plan unless they are "considered." This contention is substantiated by a conference of State officials attended by the writer during the war. It was important that the main highways be kept open during the winter to move war material, etc., and the power that was to steer the bill through the Legislature frankly said certain other roads would have to be included in the plan, else no appropriation would be obtained. They were and the bill passed.

Much educational work must be done to correct the impression prevailing among the country "constituents" that keeping the highways open is a distinct benefit to operators of motor trucks only, nor is such legislation a benefit to out-of-town owners of motor trucks. With the main or State roads open during the winter residents of the country are afforded means of reaching the cities, etc., and, as the farmer operates trucks as well as passenger cars, the removal of snow will mean more economical operation and maintenance of his cars and trucks. And so the truck and passenger car dealer, both in the cities and country, should preach the gospel of snow removal, of what it will accomplish for the farmer. Such an educational plan will accomplish results. And while he is about it let the dealer work energetically for legislation favoring State removal of snow. With the States eliminating the dual responsibility plan, the truck dealer will sell more trucks, for the majority of users engaged in inter-city haulage will be able to operate twelve months of the year, which is essential to profitable use of trucks on the highways.

A Successful Gasoline Freight Car

TWO trips a day, usually with capacity loads, are made by the gasoline "freight car" shown herewith, between Bismarck and Mandan, North Dakota, and each trip includes a ride across the Missouri River on a big, flat-bottomed ferry boat propelled by a huge stationary gasoline motor. The inter-city express is run by H. A. Schmidt, and has proved very successful financially. There is a big business in merchandise between the two cities, and while they are connected by railroad that method of transportation has proved too slow for modern merchants. Now the Red Trail truck handles most of this business, at 25 cts. per 100 lb., and Mr. Schmidt is already considering adding another to his fleet of two trucks. Each is a 2-ton International, and one is equipped with pneumatics. The other one will be as soon as its present solid equipment wears out, as the trucks have to traverse some sand on both approaches to the ferry boat, and the pneumatics have proved much more dependable in the hard going.



The attention of inter-city haulage companies is called to the type of body used on the Red Trail express. It is somewhat different than the usual type seen in this sort of work.

View Shows One of Two-Ton International Trucks Used in the Red Trail Transfer Company, That Operates Between Bismarck and Mandan, North Dakota.

Flat Bottom Ferry Boats Carry Trucks Across the Missouri River. Note the Sand Through Which the Trucks Are Forced to Traverse Upon Approaching the Boat.

Excise Car Tax to be Continued

WASHINGTON, D. C., Sept. 30.—According to opinions in Washington the excise tax on automobiles will not be repealed for five years. Reports show that taxes paid by manufacturers on the sale of automobiles and motorcycles for the year ending June 30, 1919, totaled $17,915,510.81.

Everyone in the Trade Should Discourage Overloading of Trucks

State Laws Should be Enforced. Overloading is Bad for Both the Machine and the Road

NEW YORK, October 3.—George H. Pride, president of the Heavy Haulage Co., and formerly a member of the Highways Transport Committee of the Council of National Defense at Washington, has inaugurated a campaign against the overloading of trucks. In a letter to the COMMERCIAL CAR JOURNAL he draws attention to the overloading evil in his characteristic energetic manner. The letter follows:

To the Editor:

The writer in his feeble way would like to draw your attention to one of the present menaces to the welfare of the motor truck industry, and also to the general conditions of the highways of this country. The writer has been very active in investigating hauling conditions in several states, more particularly New York, Connecticut, New Jersey, Pennsylvania, Massachusetts and Ohio.

He has found that almost universally throughout these various states the local authorities paid no attention whatsoever to the enforcement of the law regarding the gross weight of vehicles permitted to operate over the highways. It apparently made no difference whether a five-ton truck carried a 5-ton load, or whether it carried a 9-ton load, although even the most ardent partisan of motor trucks will acknowledge that an overload on the truck not only seriously damages the truck and tires, but causes an infinitely greater damage to the highways as time goes on. The reason for this overloading is very apparent.

During 1918 many people who never operated motor trucks before engaged in that business with the idea that it was very lucrative. With the coming of the armistice and cessation of war activities a great quantity of people who had purchased motor trucks on the partial payment plan were confronted with the probability of little or no business, but payments on their trucks were still to be made regularly. The consequence of this was that the owners of such trucks became panic stricken and in most instances rather than accept a lower compensation per day, they endeavored to hold their business, or increase it, or develop it in other lines where the work would only be done at a certain price per day, provided the trucks were grossly overloaded. Very rapidly the purchasers of truck service realized that with little or no pressure they could develop a greater output from the trucks they were hiring by insisting on overloading. Persistently but with great rapidity this problem of overloading has swept throughout the country. In many cases, however, this overloading has declined within the last few months, owing to the fact that many of the operators of motor trucks who permitted this practice have been forced out of business due to the breakdown of the trucks and also to the fact that the purchasers of this kind of service who had good business judgment rapidly realized that they were getting a much lower grade of service with increased breakdowns and increased lack of lubrication, owing to the abuse of the trucks, which are not made with a sufficient margin of safety to permit much if any overloading.

The writer is also of the opinion that, in one or two instances where motor trucks are manufactured in the cities where this overloading exists, motor truck manufacturers from other territories have made a concerted drive to oust the local trucks from their home city. This has led to a concerted acquiescence on the part of all the truck agents to the overloading of the trucks which they are selling their customers, in those cities. The most interesting thing about this development, however, is that the writer found practically no trucks more than a year old in these two particular cities; everything else had gone to the scrap heap very rapidly, and the scrap heap seems to show every sign of greatly increasing in size, because these new trucks through this overloading are becoming junk momentarily.

It would seem to the writer that your paper, in fact, all the motor papers, could confer a great benefit on the manufacturers of motor trucks, the owners of motor trucks, the commercial public which uses motor trucks, and, greatest of all, the general public who pays for the highways on which the trucks are operated, by starting a campaign to insist that the law regarding weight limitation be enforced in each community in accordance with the regulations in the statutes. This matter could be corrected in a month's time throughout the entire country without causing any burden to the general public, but rather relieving them of a great one.

GEO. H. PRIDE.

In an interview with a representative of the COMMERCIAL CAR JOURNAL Mr. Pride said that the overloading habit is becoming universal, that it is being encouraged by the salesmen of trucks. He believed that an intensive educational campaign should be promulgated by the trade papers and daily press advocating that the States enforce the laws relating to weights and loads carried.

"There are laws that will speedily correct the overloading evil if the States would enforce them, but they don't. I wrote the highway head of a certain State, stating that its laws prohibited a 5-ton truck carrying in excess of five tons, and desired to be informed if that law was to be enforced, as it came to my attention that 5-ton trucks were using the highways in that State and carrying from two to four tons in excess of the load allowed. The reply quoted the law, but nothing definite was said about its enforcement. If that State would enforce its laws as to weights, a law-abiding truck operator could operate, which he cannot now do in competition with those owners who use the overload as a form of price cutting.

"Pennsylvania, I understand, has purchased a large number of portable platform scales and proposes to distribute them and weigh trucks suspected of carrying loads in excess of those permitted. If the other States would pattern after Pennsylvania, catch the offenders and impose severe penalties, the evil would be corrected in a very short time."

Mr. Pride went on to say that there is a great national campaign on for the construction of good roads, but it was equally as important to preserve the roads now constructed. The best method was to enforce the laws relating to weights and measures.

An analysis of the laws of the various States and based on a digest compiled in January of the present year, showed that 61 per cent. of the States have enacted no legislation as to the weight of the truck load or load per inch tire or wheel. Of the remaining States that have adopted a law, practically over 90 per cent. permit the operation of trucks up to and including five tons with a capacity load and average type of body. About eight per cent. practically bar the five-ton truck with a capacity load.

About 28 per cent. of the States have written into their laws a section limiting the weight per inch tire section and over 50 per cent. of these stipulated 800 lb. per inch. Three States specify 650 lb. per inch.

The question naturally arises as to what effect the enforcement of the weights per truck, load and tire section would have. This may be figured. Exactly 96 per cent. of the 5-ton truck chassis listed in the specifications of the COMMERCIAL CAR JOURNAL for August, weigh 9000 lb. and under, 3.8 per cent. under 10,000 and .2 per cent. only exceed the last named weight. Of the chassis listed, from 5½ to 7½ tons, 52.9 per cent. weigh 9000 lb. and less, 23.6 from 9000 to 9999 lb., and 23.5 per cent. 10,000 lb. and over.

The fact remains that 61 per cent. of the States have not as yet enacted laws governing the weight of trucks and the loads they should carry. It would, therefore, appear that every manufacturer, dealer, distributor, owner and association interested in highway transportation is afforded a most excellent opportunity to not only educate the legislators of their respective States as to what is a reasonable load limit, but to see that no pernicious law be enacted. If influence can be brought to bear to obtain a universal law, one not imposing hardship on the industry, there is no reason why its enforcement would not eliminate the overloading evil and it must be admitted that it is assuming very large proportions.

The November issue will contain "Cost Figures" galore. Don't miss this issue!

Plea for Better Business Principles

The following letter was received from the Baker Motor Sales Company, Inc., of Cambridge, Mass., distributors of Selden trucks. The same letter was published in some of Boston's leading newspapers. It calls for action on the part of dealers to suppress certain existing trade evils, and points out the way leading to safe and sane methods of merchandising motor vehicles.

Sept. 24th, 1919.

To the Editor:

Our experience during the past fifteen years in buying and selling motor vehicles, for pleasure and commercial purposes, have been varied, interesting and instructive. It seems to us that the time has come when some existing trade evils must be corrected if the standard of this business is to be maintained at a level which will keep it not only above reproach, but of such good repute that banks, trust companies and other financial institutions and combinations of capital, will seek this class of investments and be willing to finance dealers in, or private owners of, motor vehicles; charging only the recognized legal rate of interest, plus a reasonable charge for the extra expense incidental to handling this class of securities which are usually payable in small monthly payments. It is also necessary that the purchasing public be protected in their purchases of motor vehicles and general confidence in the business restored and enhanced to such a degree that the motor industry will command and enjoy the exalted place in business and financial circles which the magnitude of the business warrants.

The financial combinations which loan money on motor securities furnished by dealers and individuals can protect the purchasing public, themselves and the motor industry as a whole, by giving less consideration to prospective financing fees and abnormally high interest returns, and more careful consideration of the actual intrinsic value of the securities they purchase and the moral hazard they assume as represented by the character of the dealer or individual they are financing.

The factories or manufacturers—and this is particularly applicable to so-called "factory branches"—make a grave mistake in demanding volume or quantity business from their local representatives. Good business should be their demand. By good business, we do not mean dealing only with firms or individuals who enjoy a high financial rating—many decidedly shady concerns enjoy a high rating and profit thereby at the expense of their business associates—by "good business" we mean dealing only with firms and individuals of recognized ability and good moral character, just men, that's all, regardless of nationality, creed or color. When the factories demand this kind of business from their local representatives, the "volume" will automatically be forthcoming and prove a good asset when it arrives.

The purchasing public are responsible in no small degree for the deplorable conditions which exist in the motor industry. They take to themselves the very questionable privilege of fixing the price and conditions under which they will purchase a motor vehicle, and they go systemically through the entire motor industry, as represented by local dealers, until they find some dealer who has his resources all tied up, and as willing to sacrifice all profit, and many times dip into his actual cash investment, for the sake of turning a sale and getting a little ready cash to pay his overdue rent. Mr. Purchaser in his short sightedness feels highly pleased with himself and with his purchase, not realizing at the time that he has secured the least valuable of the four things he should get with a commercial motor vehicle, namely, construction, guaranty, service and price. He has bought and secured "price" only, and in the transaction has robbed himself of all right to demand or receive the three more valuable and highly necessary increments to a profitable motor vehicle investment. He virtually says: "I hope the construction is good, and the guarantee and service don't mean anything anyway. I got a right price and I'll take my chances." Foolish purchaser. Price is transitory, a memory only. Quality only is enduring, and just as surely as the dawn precedes the day, just so surely is there trouble ahead for Mr. Purchaser, for the day will surely come when construction, guarantee and service will loom big on the horizon of his troubled vision, and he will seek out the dealer—if he is still in business—and implore his assistance to get his disabled vehicle into commission—forgetting that he has previously tied the dealer's hands financially, left him no profit in the original transaction, and even though the dealer has the desire and inclination to extend assistance he is powerless to do so, because Mr. Purchaser inveigled him into a deal that tied him up financially right at the start as securely as a goose is trussed preparatory to roasting.

The dealer in such a transaction has a mighty poor chance of producing a satisfactory alibi, however, when it comes to a "show down," and while we criticize the purchaser, we must absolutely condemn the dealer for his part in the transaction. There would be no hope for the motor industry in the hands of this class of dealers. But, fortunately, this class of dealers are in the minority, and while they can keep the business in a decidedly unhealthy condition, they cannot bring it to absolute disrepute. The future hope for this business centers in the dealers who recognize the value of a solid foundation for their business. A business, like a building, to be enduring, must have a solid base; no experienced contractor would attempt to erect a high building on an unsubstantial foundation, and no man should attempt to build up a business until he has first prepared a solid foundation. Indispensable in this foundation are the personal qualities, ability, stability, and reliability. These readily mould into character blocks of adamantine quality, and make splendid business building material. These character blocks, laid in a mixture of good-will and fair play service will furnish a foundation on which any business may safely be built. To this class of dealers in motor vehicles, and there are many in Greater Boston, we urge a progressive alliance for the suppression of trade evils, and the promotion of sound business principles. The first step toward this end would be the voluntary submission by dealers of their records, accounts, etc., to an investigating committee of three or five members, impressed or chosen from leading local financial institutions, which are especially interested in the motor industry. Only such dealers as this committee found to be conducting their business on sound business principles would be eligible for membership. The cost of this preliminary investigation would necessarily have to be borne by the dealers whose business methods were approved and endorsed by this financial committee, and as a pledge of good faith on our part and an expression of our confidence in the benefits to be derived from this kind of an investigation, we hereby pledge two hundred dollars toward meeting the expense of the same. It will be a great pleasure to us to hear from other dealers on this subject, which seems to us of vital importance to our industry.

W. H. BAKER, Mgr.

New Line of Trucks

CONASTOTA, N. Y., Sept. 25.—Plans made before the war by the Watson Products Corp. are about to materialize. These include the introduction of a new line of trucks on the market. It is understood that the engineering plans, which are all perfected, call for a ¾-ton, a 1½-ton, a 2½-ton and 3½-ton model. A number of these trucks have been built and put to work in several localities, so that they may be thoroughly tested and all details perfected before the trucks are officially placed on the market.

The company was formerly known as the Watson Wagon Co. In July of this year the capital was increased and the name changed to the Watson Products Corp. The company has since purchased several other concerns, thereby materially increasing its production capacity.

Convention Date Changed

WASHINGTON, D. C., Sept. 19.—Because of the inability of foreign delegates to reach this country in time the Chamber of Commerce of the United States has been obliged to postpone its convention. It will now be held at Atlantic City, N. J., during the week of October 20.

Buffalo Truck Dealers' Tour a Huge Success

Exceptionally Educational in Every Respect and Proved the Possibility of a Well Defined Schedule

A CONCRETE example of the contention that motor trucks can be operated on schedule has been given by the "Ship-byTruck" tour conducted under the auspices of the Buffalo Truck Dealers' Association, September 22-27, inclusive, during which time eighteen different makes of trucks and represented by as many dealers, traveled through nine counties and forty-eight cities and towns.

The object of the trip was to educate the farmers and business men to the possibilities of highway motor transport, to demonstrate that trucks could be utilized to haul all commodities, and that a fleet could maintain a well defined schedule. The tour was a huge success from every standpoint. From the time the cars left Buffalo at eight o'clock Monday, Sept. 22, until tney arriveo home at 5.30 at night, the forty-eight towns were made on schedule, and the distances varied.

Tour Nine Counties

The nine counties traversed included Niagara, Orleans, Monroe, Genesee, Wyoming, Allegheny, Cattaraugus, Chautauqua and Erie, having a combined population of over 1,000,000. The districts are rich in fruits, vegetables, hay, grain, etc., and afford economical transportation by truck to the shipping terminals. Loads were carried by the trucks which were of various capacities, from the high speed delivery truck to the 5-ton. This was done to show the farmers how trucks would solve their transportation problems. A concrete example was the transporting of 3½ tons of potatoes near Little Valley to a wholesale house at Jamestown in three hours. The goods had been ordered by phone that morning and much to the surprise of the commission man a truck drove up to his warehouse early in the afternoon.

Towns Co-operate

The meetings at the various evening stops, as well as others, were well attended. This was due to the efforts of A. W. Carpenter, of the International Harvester Co., who had charge of the publicity and speakers. He obtained the co-operation of the newspapers along the route, as well as the county papers, so that the event was well advertised. As a result the town officials, etc., extended a royal welcome to the dealers and the evening meetings were full of pep. A band accompanied the trucks and gave concerts at night, which was another drawing card.

Very successful and largely attended evening meetings were held at Lockport, Batavia, Olean, Towanda and Westfield and talks on highway transportation were given by A. W. Carpenter, W. J. Glynn, of the Warner Trailer Co., and A. L. Bowman, of the Goodyear Tire & Rubber Co. Meetings, of course, were held in every town through which the trucks passed. Holley, N. Y., was another town that appreciated the efforts of the Buffalo truck dealers, and on the third day the trucks were met at Silver Springs by the Board of Castile, who extended a right royal welcome, lunched the boys and presented each with a basket of fruit. Fillmore arranged a joint return home day for its soldier boys and the trucks, and a large crowd was on hand.

Exhibit at Fair

The fleet reached Hamburg in time to attend the Erie County fair, the officials of which extended an invitation to be present, and the trucks were paraded around the race track twice, which was some innovation for a fair. At Towanda the Board of Commerce was waiting and the evening meeting was the banner event of the trip. The boys will always remember Towanda for the entertainment following the evening meeting. In practically every city the dealers were welcomed by a committee from the Chambers of Commerce, particularly at Jamestown and Dunkirk, where the welcomes were wholesome and hearty.

No merchandising was indulged in by the truck representatives, nor did they attempt to obtain business, the tour being, as previously stated, merely educational and demonstrative. Traveling as did the trucks through farming communities, and in many instances transporting commodities with which the farmer is familiar, the tour probably accomplished more than would the conventional methods of advertising the possibilities of the truck. It is believed that the showing made by the cars and the talks by the speakers will pave the way for sales in the counties visited, and the trip cannot be other than a great aid to the subagent or dealer not thoroughly experienced in the merchandising of transportation.

No little credit is due the tour committee, which consists of H. M. Damon, A. C. Fry, H. E. Swezey and A. W. Carpenter. Walter S. Gilliam, tourmaster, and his lieutenants, Charles Spracker and Arthur Allen, are responsible for the clock-like completion of the schedule.

The trucks and dealers participating were as follows:

Dealer	Truck
Sentinel Motor Corp.	Day-Elder
Courier Auto Repair Works	Acme
Meyer Motor Car Co.	Reo
Pierce-Arrow Sales Co.	Pierce-Arrow
E. T. Parkes	Autocar
J. Blair Clark, Inc.	Republic
International Harvester Co.,	International
Kam-Kaderbeck, Inc.	Kissel
Atterbury Motor Car Co.	Atterbury
H. E. Swezey, Inc.	Federal
C. D. Gill	Clydesdale
Nash-Buffalo Corp.,	Nash, Warner Trailers
Kam-Reiman Co.	G. M. C.
Weaver Motor Car Co.	Mack
Chalmers Motor Co.,	Selden, Troy Trailers
Buffalo Sterling Motor Truck Co.,	Sterling
Cole Motor Car Co.	Maxwell
Oliver Tractor & Trailer Co.,	Bethlehem Trailers

"Ship by Truck" Parade in Allentown

Dealers in the neighboring cities of Allentown and Bethlehem, Pa., successfully staged a "Ship by Truck" parade on September 22, the opening date of the Allentown Fair. The parade after forming in Bethlehem went to Allentown and made a circuit of the Fair grounds.

Over three hundred trucks were in line and they ranged from the light delivery car which might call to take a suit of clothes to the cleaners, to the big trucks carrying five tons or more.

The publicity value of the parade was followed up by special sales efforts by dealers in the territory. The local papers brought out special "Ship by Truck" sections devoted, not only to the parade, but to the truck industry generally. All of the dealers carried special advertising for the occasion.

Spectators along the line of the parade were impressed with the completeness of the transportation service shown by the trucks in line. The parade was headed by four mounted traffic officers. Everyone else rode in trucks, including the bands. Seated comfortably on chairs on a platform truck body they gave a moving concert quite unlike the usual marching appearance.

These parades, a series of which have been planned and arranged by the Firestone "Ship by Truck" Bureau, are demonstrating forcibly to the public in general the growing importance of the truck in the nation's transportation problems.

Field Mfg. Co., Owosso, Mich., manufacturers of commercial truck bodies, are building a large addition to their plant. The entire plant is to be equipped with automatic machinery. The plant will be ready for use about Nov. 15.

Officers of the company include J. F. Field, president; E. J. Frederick, general manager; F. H. Bason, office and production manager; A. L. Moyses, general superintendent; C. C. Thomas, chief engineer; A. L. Ditter, general sales manager; F. J. Bosma, sales manager, and T. E. Latimer, traffic manager.

Thirty Trucks Participate in Des Moines Tour

INSPIRED by the splendid success of the National Motor Truck Development Tour, which went through Des Moines last month, members of the Des Moines Motor Truck Dealers' Association are staging a 500-mile motor truck tour during the week of October 13-18 through the very heart of Iowa's farming lands. Over thirty motor trucks from the Des Moines dealers and a half dozen of the national tour veterans are scheduled to make the trip, and the tour differs from preceding ones in that the trucks will carry farm implements and accessories and merchandise displays, which will be exhibited along the way. Demonstration hauling of farm products, live stock, etc., will also be made during the tour. A big Delco lighting plant will be carried, furnishing current for 100 lamps of 20 watt capacity, so that the entire caravan may be illuminated every night. The itinerary is as follows, the last named town after each date being the night control:

Monday, Oct. 13, Des Moines, Ankeney, Elkhart, Cambridge, Nevada, Colo, State Center and Marshalltown; Oct. 14, Laurel, Newton, Kellogg, Grinnell, New Sharon and Oskaloosa; Oct. 15, Eddyville, Albia, Chariton, Lucas and Osceola; Oct. 16, Murray, Afton, Creston, Macksburg and Winterset; Oct. 17, Earlham, Dexter, Stuart, Menlo, Guthrie Center, Panora and Perry; Oct. 18, Ogden, Boone, Madrid and Des Moines.

Trucks entered by Des Moines dealers are as follows:

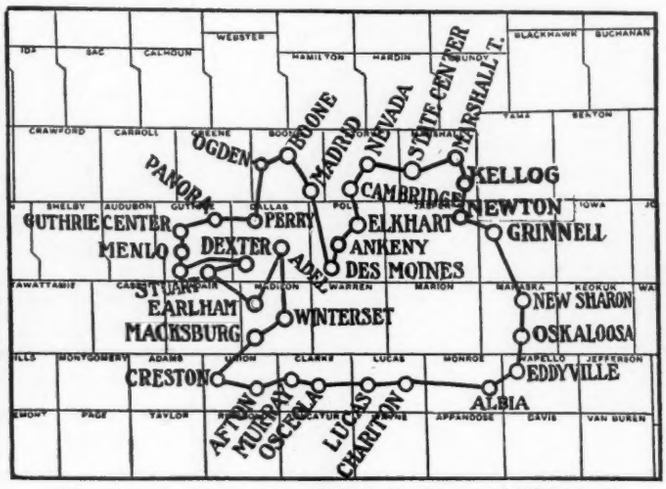
Central Iowa Motor Co., Denby; Chase Auto Co., Nash; Consigny Motor Co., Republic; Chapman Motor Co., All American and Gramm-Bernstein; Des Moines Buick Co., G. M. C.; Fletcher Truck Co., Selden; Franklin Motor Co., Autocar; Hansen-Tyler Co., Traffic; Iowa Truck & Tractor Co., Panhard; Independent Truck Co., Independent; International Harvester Co., I. H. C.; Lagerquist Carriage Co., Clydesdale; Lorenz Truck Co., Standard; Manbeck Motor Co., Maxwell; Matthews Auto & Tire Co., Indiana; Motor Sales Co., Master; Oldsmobile Co., Olds; Payne Motor Co., Packard, Commerce and Paige; Sears Automobile Co., Stewart and Reo; Truck Service Co., Service; Odell-Hamilton Co., Mack and Winther.

Officers of the Des Moines Motor Truck Dealers' Association managing the tour are: Harter Hull, president; J. C. Beatty, vice-president, and Don T. Chemberlin, secretary.

A. R. Kroh, who was in charge of the national tour just closed, will accompany the tour as principal speaker, and Leo H. Boydston, of the Service Motor Truck Co., will act as truckmaster in charge of the train.

The fact that the Des Moines Chamber of Commerce is solidly behind the tour and that several officers and members of the Chamber will accompany it, gives added weight to the purpose of the trip, and Iowa truck dealers and business men generally in the central section of the state look for big results to follow the completion of the trip.

Leo H. Boydston
Service Motor Truck Company, Truckmaster



Map Showing Route Over Which the Trucks Will Travel

Harter Hull
President Des Moines Motor Truck Dealers' Association

"Ship by Truck" is Featured in Novel Parade and Demonstration

PEORIA, ILL., Sept. 29.—The "Ship by Truck" parade, sponsored by the motor truck dealers of Peoria, assisted by the Firestone Ship by Truck Bureau, not only will have a wholesome effect on the sale of motor trucks but also will tend to increase the business and profits of those who make a business of truck delivery.

Over 400 motor trucks lined up for the monster demonstration on September 15. Lieut. Barber blew his whistle and the big demonstration was on. First came a huge truck with members of the Peoria Band. These were followed by gaily decorated trucks from the Army and Navy Recruiting Offices. Two huge "tanks" came next in line and then followed motor trucks engaged in every conceivable kind of business. There were trucks engaged in hauling live stock, coal, milk, cream, fruits and vegetables, farm machinery, groceries, dry goods, furniture, oil, eggs, and scores of other businesses too numerous to mention. One feature was a truck loaded with 75 bales of hay.

Thousands of people, in Peoria for the fair, commented on the unbelievable number of machines in line and marveled at the trucks that had come five to forty miles to participate in this big "Ship by Truck" movement.

It effectively answered the question "Is shipping by truck profitable?" for surely the answer could be seen in the different businesses that are using motor trucks. Possibly this question was best answered by noting the large numbers of "Fleets" in the parade indicating the owners had found this method of transportation the most economical and effective.

New Company to Manufacture Trucks and Cars

FREMONT, O., Sept. 10.—The Fremont Motors Corp. has been organized for the manufacture of passenger cars and trucks. The company is capitalized at $2,000,000. The company has purchased the plant of the Burford Motor Truck Co. and will continue the manufacture of the present Burford truck. It will specialize in the manufacture of a four-passenger car, which will sell at $1285. Fred M. Guy will be sales manager of the concern. C. Whitmore, formerly of the Packard Motor Car Co., is in charge of factory management.

Consolidated Tool & Equipment Co., Chicago, Ill., has been declared bankrupt in the District Court of the United States for the Northern District of Illinois.

EDITORIALS

Vicious Business Methods

WE have often heard it said "that certain dealers are giving them away," meaning that they are selling their trucks at cost, or probably shading the price. But we did not believe that any dealer would be willing to sacrifice profit, reputation, selling cost, and then some, simply to make a sale. We cannot disclose the names of the parties involved in this particular transaction, but we can vouch for the facts. Here's the story briefly:

A certain merchant needed a new truck. His old machine had seen over three years' hard service—its frame was bent in the middle and the rear axle needed thorough overhauling. The branch handling this particular make of machine was willing to take it in, have it overhauled and make a fair allowance. But another dealer got on the job and began to make greater allowances. The branch increased their allowance a little—and this performance kept up for over a month. First one, then the other boosted his allowance. The branch salesman was ordered to quit work on this order after the allowance was up to a certain figure. To make a long story short, the dealer got the order. But here's the result.

The dealer allowed $1200 for the old bus (yes, that's the actual figure), he had to pay $450 to have the old machine put in shape, and the branch which did the work was the other competitor. The new truck the dealer gave away cost $2350.

Now the point is, how can such a dealer give service and still remain in business? You can figure it out for yourself where this dealer will eventually get off. The branch wanted this "repeat order," but it didn't sacrifice everything just to make a sale.

All we say is this—That if you can't sell on merit, and get a decent price, quit the business—it will be for the good of the industry.

Daylight Saving

THE Daylight Saving Law continues until the end of October this year, but will not be renewed next year unless something is done about the matter. The President's veto of August 15th, 1919, of the law's repeal, was overridden by the House and Senate with a two-thirds majority.

It is quite evident that a large part of the people of the United States are still in favor of the Daylight Saving Plan. However, owing to the strenuous effort of those who were not satisfied, particularly those in farming communities, the law has been repealed.

The individuals and associations that originally suggested, fostered and finally put this law into effect are still working to bring it back and make it a part of the organic law of the United States. Those who are in favor of Daylight Saving should make their views known. Get in touch at once with your Congressmen and Senators if you believe in Daylight Saving, tell them in unmistakable langauge that you want the law re-enacted and placed permanently upon our statutes.

Return of the Return-Loads Bureau

QUITE a little publicity has reached this office during the past few weeks dealing with the subject of Return Load Bureaus, and it is interesting to note that in every instance the same solution is offered by the different writers as to the successful operation of such a bureau.

A great deal of printers' ink, paper and energy were devoted to this subject during the war period, and for some time a great number of these bureaus did very satisfactory work. However, with the war over and the tendency to relax from duties, "which wasn't getting them anything," a great many return load bureau enthusiasts simply let the work slide.

The average truck dealer isn't particularly fond of the return loads bureau, simply because he figures that the return loads idea carried out successfully would mean less trucks on the road and consequently less sales. Some logic in that, of course. On the other hand, however, the Return Load Bureau idea carried out on a more extensive scale than at present, would result in more truck sales, for the simple reason that many concerns would ship by truck because they would be assured of a service which would outclass any other form of transportation in many ways, and at a price that would be attractive.

Past experiences have shown that only when the work of soliciting is done by a paid individual, under the auspices of a motor truck association or by a truck men's association, will the bureau be a success. These bureaus, operating under a profit sharing basis and being financed by the trucking companies themselves, will undoubtedly do much good in preventing trucks going long distances without a load, and help to develop the inter-city truck haulage business.

News of the Trade in Brief

Change in Tax on Parts

The Revenue Bureau, in Treasury Decision 2915, has made a radical change in the method of handling the tax on tires, inner tubes, parts and accessories.

According to this decision:

1. The car manufacturers may now purchase all the parts named above tax free and pay the tax to the government when he resells them.

2. When these parts are sold as components or equipment on a new vehicle, the tax is on the proper percentage of the selling price of the vehicle so equipped.

3. If the part is sold separately, as a service or repair part, the tax is 5 per cent. of the car makers' selling price.

4. A new form of certificate, just issued, must be used. This may be printed or attached to the purchase order or it may be given to the supplier of the various accessories, in which case it should cover all orders made during the month.

5. These same rules apply to makers of tires, inner tubes, parts and accessories, who purchase articles which may be defined as automobile tires, inner tubes, parts or accessories, from a manufacturer. This tax is due only when sale or resale of such articles is made to a person who is not a manufacturer.

6. There is no tax exemption when the part is sold by its maker to a dealer or distributor, who, in turn, sells it to a car or parts manufacturer. The tax is upon the maker of the article.

The decision reads as follows:

T. D. 2915
To Collectors of Internal Revenue and Others Concerned:

Article 14 of Regulations 47 entitled "Tires, inner tubes, parts and accessories sold to manufacturers" is hereby modified to read as follows:

Subdivision (3) of Section 900 of the Act exempts from tax, sales of tires, inner tubes, parts, or accessories to a manufacturer or producer of automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts, or accessories. In order for the sale to come within the exemption of the statute, the vendor must also at the time the goods are shipped or sold (whichever is prior) have in his possession an order or contract of sale, with certificate of the purchaser in writing, printed thereon or permanently attached thereto, to the effect that the purchaser is a manufacturer or producer of automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts or accessories; that he is purchasing the articles in question as such manufacturer or producer for resale in some form or manner, or for free replacement under contract or guaranty; and that he will account to the Internal Revenue Collector and pay the tax on the sale of such articles, unless such sales by him are made to another manufacturer or producer of automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts, or accessories for resale by him in some form or manner or for free replacement, in which case he will require the same form of certificate from such manufacturer or producer; that when such tires, inner tubes, parts or accessories are sold other than on, or in connection with, the sale of new automobile trucks, wagons, automobiles or motorcycles, he will pay the tax on such sales (unless made to a manufacturer or producer, or for free replacement under a contract or guaranty); that when such articles are sold on or in connection with the sale of such new vehicles he will pay the tax on the selling price of such vehicles, including such articles. Said manufacturers furnishing such certificate will be deemed manufacturers within the meaning of the law and subject to the tax imposed on sales of such articles by manufacturers, unless the sales are made to another manufacturer or producer of automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts or accessories, for resale by him in some form or manner or for free replacement under a contract or guaranty, and who furnishes a certificate so stating.

Form of Certificate

Following is a form of the certificate or statement which will be accepted, and in substance must be strictly adhered to:

The undersigned hereby certifies that he is a manufacturer or producer of automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts or accessories, and that the tires, inner tubes, parts or accessories purchased hereunder are purchased by him as such a manufacturer or producer for resale in some form or manner, or for free replacement under contract or guaranty, and agrees if any of the tires, inner tubes, parts or accessories are sold by him exempt from tax to another manufacturer or producer of automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts or accessories for like purposes, he will require a similar certificate from such manufacturer or producer. The undersigned further agrees that in respect to all tires, inner tubes, parts or accessories sold by him, unless such sale is made to such a manufacturer or producer, he will pay the tax on such sale direct to the Internal Revenue Collector, including it in his tax return covering the month in which such sale is made; said tax to be paid on the basis of the taxpayer's selling price of such article when sold other than on or in connection with, the sale of new automobile trucks, automobile wagons, other automobiles, motorcycles, tires, inner tubes, parts or accessories, and on the selling price of such vehicles or articles when the same includes such articles.

If it is impracticable to furnish a certificate for each order, a certificate covering all orders between given dates (such period not to exceed a month) will be accepted. If in any case such an order and certificate cannot be produced on demand of any authorized agent of the Department, the tax in respect to the sale will be considered in default.

So much of the provisions of Regulations 47, Treasury Decisions 2852, 2860 and 2893, as relate to the sale of "tires, inner tubes, parts or accessories" are, in so far as they conflict herewith, hereby revoked.

Approved September 3, 1919.

Coming Events

October 15, **New York City**—Opening of International Farm Tractor and Implement Exchange, Grand Central Palace.
October 20 to 25, **Atlantic City, N. J.**—International Trade Conference, auspices U. S. Chamber of Commerce.
October 25 to November 9, **Waco, Texas**—Tenth Annual Cotton Palace Exhibit. Autos, trucks and tractors.
October 27 to 31, **Detroit, Mich.**—National Assn. of Motor Truck Service Managers.
November 3 to 8, **Phoenix, Ariz.**—Fourteenth Annual State Fair. Trucks and tractors featured.
November 3 to 8, **Chicago, Ill.**—Show of Automotive Equipment Association. Medinah Temple.
November 7 to 8, **Detroit, Mich.**—Annual Conference, National Assn. of Motor Truck Sales Managers. Hotel Statler.
November 10 to 13, **Detroit, Mich.**—Service Managers' Convention.
November 21 and December 19, **Detroit, Mich.**—Section, Society Automotive Engineers. Hotel Ponchartrain.
December 2 to 9, **Peoria, Ill.**—Convention State Retail Implement and Vehicle Dealers' Assn. W. L. Derry, Sec., Vermont, Ill.
December 3 to 5, **Cleveland, Ohio**—Ohio Auto Trade Assn. Annual Convention.
January, 1920, **New York City**—International Auto Manufacturers' Congress.
January, 1920, **Washington, D. C.**—Pan-American Conference.
January 3 to 10, 1920, **New York City.**—Commercial Cars and Accessories. 22nd Regiment Armory.
January 6 to 8, 1920, **Omaha, Neb.**—Mid-West Implement Dealers' Assn., Auditorium. James Wallace, Sec., Council Bluffs, Ia.
January 7 to 8, 1920, **New York City**—Annual Winter Conference, Society Automotive Engineers. Coker F. Clarkson, Sec. and Gen. Mgr., 29 West 39th St.
January 24 to 31, 1920—**Chicago, Ill.**—Commercial Cars and Accessories. International Amphitheatre.
February 9 to 13, 1920, **Louisville, Ky.**—Annual Show and Convention of American Road Builders' Association.
February, 1920, **Deadwood, S. D.**—Deadwood Business Club's Annual Show.
February, 1920, **Chicago, Ill.**—International Auto Manufacturers' Congress.
February 9 to 11, 1920, **Wichita, Kans.**—Tractor and Farm Machinery. Forum. Wichita Thresher-Tractor Club.
February 9 to 13, 1920, **Louisville, Ky.**—Seventeenth Annual Convention, American Road Builders' Assn. Tenth Annual Good Roads Congress. Eleventh National Good Roads Show.
February 23 to 28, 1920, **Louisville, Ky.**—12th Annual Auto. Dealers' Assn. First Regiment Armory.
February 24 to March 1, **Kansas City, Mo.**—Motor Car Dealers' Show, Convention Hall. Passenger Cars, Trucks, Accessories.
February 24 to March 1, **Kansas City, Mo.**—National Tractor Show, auspices Kansas City Tractor Club. Guy H. Hall, Mgr., Sweeney Bldg.
March 13 to 20, 1920, **Boston, Mass.**—Boston Automobile Show. Chester I. Campbell, Gen. Mgr., 5 Park Square.
April, 1920, **London, Eng.**—Olympia Commercial Vehicle Exhibition.
April 3 to May 4, **Buenos Aires, Argentine**—Exposition of U. S. Manufactures.
March and April, 1920—**Pretoria, South Africa**—South Africa Products Exposition. (Overseas motor vehicles especially features.)
May 15 to 20, 1920, **San Francisco, Cal.**—Seventh National Foreign Trade Convention.

Foreign Events

November, **Christchurch, N. Z.**—First National Motor Vehicle Show.
November 7 to 16, **London, England**—Olympia Exhibition. Society of Motor Manufacturers and Trades.

M. & A. M. A. Hold Convention

NEW YORK CITY, N. Y., Sept. 13.—The most successful convention ever held by the Motor and Accessory Manufacturers' Association closed its business Sessions at the Hotel Lafayette, Buffalo, N. Y., September 12.

The business sessions of both days were devoted chiefly to the discussion of credit subjects.

In the informal discussion which followed the addresses many of the members expressed their opinion on the general usefulness of the Association in cooperative work as well as its specific service to its members in matters effecting credit, railroad transportation, legislation, the administration of the excise tax, and all the other activities vital to the industry.

General conditions existing in the business world were likewise discussed and especially from those angles which related to the automotive industry. Throughout all the discussions there predominated a sane optimism which seemed to be the general attitude of the 150 representative executives of the industry who attended the convention.

Keen gratification over the success of the convention was expressed by M. L. Heminway, general manager of the Association, and C. A. Burrell, manager of the Credit Department. An informal banquet was held on Thursday evening and Saturday was given over to a trip to Niagara Falls and a golf tournament.

France Needs Heavy-Duty Trucks

NEW YORK CITY, Sept. 25.—According to Pierre Fevrier, an engineer of the Etablissements J. Epinat, Vichy, France, the French are in need of heavy duty trucks of from three- to five-ton capacity. But the American maker who desires to place his product on the French market must be prepared to quote a price not in excess of $3300.

Master Equipment Co., Los Angeles, Cal., has been declared bankrupt by the District Court of the United States.

Automotive Screw-Thread Commission Makes Report

WASHINGTON, D. C., Sept. 15.—The National Screw Thread Commission, recently created by Congress, has given a report on the systems of threads, together with data, information and specifications pertaining to the manufacture of the threads recommended. It emphasized the fact that the specifications and proper manufacturing tolerances in a factory are necessary for the attainment of economical production and quality of product.

At the request of the commission the Society of Automotive Engineers held a meeting for the purpose of securing the most comprehensive information as to what is most desirable in the screw thread practice in the automotive industry. It was decided to obtain this information from representative men of the industry.

Army Trucks End Tour

SAN FRANCISCO, CAL., Sept. 19.—The transcontinental motor truck convoy of the Motor Transport Corps has reached its destination. In spite of its arrival in San Francisco five days later than scheduled time the tour was a success. The seventy-three motor vehicles in the convoy left Washington, D. C., on July 7 and arrived in San Francisco September 5. Time was lost in Nevada because of heavy rains and in Nevada and Utah because of the desert.

The trip demonstrated very clearly the absolute necessity of hard surfaced highways extending across the continent. Wherever it went the convoy succeeded in arousing great interest.

The 3-A Piston Ring

In the August 15th issue of this magazine, in the accessory columns, was described the new Bull Dog Steel Spring Piston Ring, manufactured by the Steel Spring Piston Ring Co., 2 Columbus Circle, New York City. The trade name used, in this description, was incorrect, since the trade name has just recently been changed to the 3-A Piston Ring.

New York Highway Transport Committee Plans to Market Farm Produce

ALBANY, N. Y., Sept. 25.—At the first meeting of the Highway Transport Committee, appointed by Gov. Smith, the State was sub-divided with approximately six counties to each division. A county committee of five is to be appointed and will comprise the following: Manager of County Farm Bureau, superintendent of highways, president of Chamber of Commerce or Board ot Trade, a farmer and an active business man, the latter to serve as chairman. Each county is to be sub-divided into community committees. These will represent places where conditions are favorable for the operation of the Rural Motor Express.

The Hon. Peter G. Ten Eyck is chairman of the committee, which includes a member of the Bureau of Farms and Markets, State Commissioner of Highways and a representative of the agricultural department of Cornell University. The various committees will endeavor to work out a plan whereby farm products may be disposed of in the cities, which is a problem of marketing facilities, not transportation, if the use of trucks for this purpose is to be made successful.

Freight Shortage Very Serious

NEW YORK CITY, Sept. 25.—A telegram has been sent to Walker D. Hines, Director General of the U. S. Railroad Administration, by the National Industrial Traffic League, notifying him that, if serious disaster to industry is to be averted, radical means will have to be taken to speed up the movement of empty and loaded cars, since faster movement is the quickest way of augmenting car supply. It also urged immediate action to speed up repairs on cars now unusable in order that the maximum number of carriers may be available for the distribution of the vast tonnages of commodities now stored all over the country because of inability to move them. It suggested that new car construction be deferred, so that all labor and material might be concentrated on renewing those cars now out of commission.

Trucks Allotted by States

The government's good roads program calls for the distribution of twenty thousand motor trucks of various makes and of the total number more than one-third are Nash Quads.

Under the act of Congress, which authorized the distribution, the trucks are turned over by the Quartermaster's Department to the Department of Agriculture. They will be equipped by the various states with hydraulic hoist bodies for road-making work.

The following table shows the allotment made to each state:

Alabama	432	Maryland	181	Oregon	326
Arizona	282	Massachusetts	303	Pennsylvania	942
Arkansas	343	Michigan	596	Rhode Island	48
California	622	Minnesota	584	South Carolina	296
Colorado	358	Mississippi	366	South Dakota	333
Connecticut	124	Missouri	697	Tennessee	462
Delaware	84	Montana	413	Texas	1,199
Florida	236	Nebraska	440	Utah	237
Georgia	553	Nevada	265	Vermont	95
Idaho	251	New Hampshire	83	Virginia	406
Illinois	398	New Jersey	245	Washington	298
Indiana	556	New Mexico	331	West Virginia	217
Iowa	595	New York	1,021	Wisconsin	521
Kansas	593	North Carolina	470	Wyoming	252
Kentucky	400	North Dakota	319	Forestry	118
Louisiana	280	Ohio	761	Public Roads	506
Maine	196	Oklahoma	476	Total	20,560

A. G. M. A. Hold Semi-Annual Meeting

The semi-annual convention of the American Gear Manufacturers' Association was held at Boston, October 13-16. A friendly rivalry was aroused among the member companies by dividing them into groups. Each group endeavored to have the largest representation present. This resulted in one of the largest conventions in the history of the organization.

An interesting program of speakers and sports had been prepared. The chief subject of discussion was Gear Standardization.

Senator Townsend Enlists Farmers' Aid

Senator Charles T. Townsend, of Michigan, has sent to members of the National Grange a letter, urging co-operation in securing the passage of the Townsend bill. The letter follows:

"Few questions are of more far reaching importance to the people of the United States—none, in my opinion to the people of the farms of the United States—than the question of how best to efficiently and economically build roads which will serve all interests.

"The remarkable growth of motor transportation in the past few years, and its still more tremendous potentiality for the future, the great necessity for inter-state roads no less than market roads, has brought us to a point where past procedure is no longer sufficient. Large sums will invariably be expended on our highways to make them useful for longer periods and to decrease transportation costs. Every dollar so expended must bring back a full dollar's worth of value.

"At the last session of Congress I introduced a measure which would provide for a national highway system of main truck lines to be constructed and forever maintained by the United States government under the direction of a federal highway commission and requiring as a basis for administration a scientific study into the principles governing highway transportation and construction.

"My purpose at that time was simply to bring about a country-wide discussion. So general was the public interest that a great many national, State and local organizations indorsed the principles so enunciated, while many valuable and constructive suggestions were received.

These suggestions I have since incorporated into a bill which is now once more before Congress, this time with the hope that an aroused and enlightened public sentiment may result in its translation into law.

"A principle involved in this bill may need statement in more detail at this point, to meet certain suggestions which have come principally from the people of the farms of the country. It is that by taking over a certain definite mileage of highways in every State to be built and maintained by the federal government, the States and localities will be given not only the incentive and the example of well-built roads, but will also have saved from their own expenses for such construction the money needed to build those equally needed market roads, and at the same time will be providing the across-state and interstate roads which make every radiating market road not only a market road to its nearest market point, but to the other greater market centers.

"If you agree with the principles contained in my measure, I would be glad to have your earnest co-operation in securing its passage."

The Higgins Spring and Axle Company Not Sold

RACINE, WIS., Sept. 9.—The Higgins Spring & Axle Co. announces that any reports to the effect that it has sold out its business and equipment to the Continental Spring & Axle Co., Edgerton, Wis., are entirely erroneous. The Higgins company is still in business and has no connection whatsoever with the Continental Axle Co.

Traylor to Make Trucks

ALLENTOWN, PA., Sept. 10.—The Traylor Engineering Co. announces that they are planning to build trucks as well as speed up their tractor production.

New Omnibus for London

LONDON, ENG., Sept. 1.—The new omnibus, about which there has been so much talk in London, has made its appearance in the streets of the British capital. A solitary example is running at present. The vehicle is lighter in weight than its predecessors, which were limited to 3½ tons (British) unladen. It carries forty-six passengers, while the older one carried thirty-four. In the body of this new omnibus the inside seats are arranged across the car, facing forward, instead of along each side, as in the existing buses, and the platform is longer to give a double entrance.

Will Labor Situation Aid Truck Sales?

CLYDE, O., Sept. 30.—According to A. C. Burch, vice-president and sales manager of the Clyde Cars Co., labor and material shortages are proving a blessing in disguise for motor car manufacturers. These shortages are resulting in the adoption by the manufacturers of many time and labor saving devices and methods, which have been successful in replacing labor and have proven an actual saving in cost.

Many manufacturers instead of crating their products and shipping them short distances, are now loading them on heavy trucks. This is only one of the many instances where labor shortage has resulted in saving to the company and, when the labor situation is cleared up, truck manufacturers will find the road opened to many new sales.

Trucks Exhibited at Dairy Show

CHICAGO, ILL., Oct. 13.—An exhibit of trucks was one of the features of the National Dairy Show held at the International Amphitheatre at the Union Stock Yards from October 6 to 12. The exhibit included the Kissel, Federal, Huffman, Sterling, Maxwell, Oldsmobile, Service, Diamond T, White, Selden, Fulton, All American, Reo, Ward and Clydesdale trucks.

Motor Vehicle Theft Act

WASHINGTON, D. C., Sept. 15.—What is considered one of the greatest single pieces of constructive legislation ever offered the automobile trade, is the Dyer bill, which has been passed by the National House of Representatives by a vote of 200 to 40.

This bill, sponsored by Representatives L. C. Dyer and C. A. Newton, carries a penalty of a maximum fine of $5000 and five years' imprisonment for conviction of any one, in any state or territory or the District of Columbia, than ten years for any one, in any state or territory or the District of Columbia, who shall unlawfully take away or conceal, with the purpose of converting to his own use, any automobile, automobile truck or any other motor vehicle. This penalty is also applicable to any one who shall buy or have in his possession any vehicle obtained in such fashion.

The bill is known as the "law with teeth to it" and is aimed to check automobile thefts. It has the support of the N. A. C. C. and all other associations interested in the automotive industry.

Army to Train Motor Transport Men

WASHINGTON, D. C., Sept. 30.—The United States Army is organizing schools to train men in the various branches of automobile repair, construction, and operation. These schools are to be under the supervision of trained teachers where the time for the pupil is wholly devoted to receiving instruction.

The United States Civil Service Commission is receiving applications to fill 150 positions of assistant instructor in these motor transport training schools. Detailed information may be obtained from the U. S. Civil Service Commission, Washington, D. C., or from the secretary of the U. S. Civil Service Board at the post office or the custom house in any city.

Selden Companies Combine

ROCHESTER, N. Y., Sept. 29.—The Selden Truck Sales Co. announces that its name has been changed to the Selden Truck Corporation and that the new organization is a reincorporation of the combination of the Selden Truck Sales Company and the Selden Motor Vehicle Company. The latter has been the manufacturing division of the former for a number of years. Geo. C. Gordon is president of the new corporation.

Government Exhibits War Equipment

NEW YORK CITY, Sept. 29.—The National Automobile Chamber of Commerce has made arrangements whereby persons interested in the automotive industry may visit the automotive exhibition at the government arsenal at Rock Island, Ill. The exhibit is to display the automotive equipment used by this country during the war.

Personal Items

Wm. M. Apperson, formerly of the factory sales force of the Bethlehem Motor Truck Co., is now manager of the truck department of the Universal Auto Co., Hartford, Conn.

Melvin W. Boyle has been appointed sales manager of the White Motor Sales Co., Akron, Ohio.

L. M. Bradley, formerly general manager of the Motor & Accessory Manufacturers' Association, has joined the Frank Presbrey Co., New York City.

Arthur C. Brenckle has been made secretary and general manager of the Olympian Motors Co., Pontiac, Mich.

L. N. Burns has been elected president of the J. I. Case Plow Works, Racine, Wis.

Vernon E. Bush is now manager of the Export Sales Division of the Republic Motor Truck Co., Inc., Alma, Mich.

W. B. Condit has accepted a position as chief draftsman for the Nelson Motor Truck Co., Saginaw, Mich. Mr. Condit was formerly of the engineering staff of the Gramm-Bernstein Motor Truck Co.

C. M. Cornog, recently of the Standard Auto Parts Co., Cleveland, Ohio, is now district manager for the Standard Woven Fabric Co., manufacturers of Multibestos brake and clutch linings.

Bob Crowthers has been appointed advertising agent of the Gary Motor Truck Co. His headquarters will be at Gary, Ind.

E. R. Downs is now associated with the F. A. Adams Co., Owensboro, Ky.

J. Fletcher Farrell has been elected a director of Briscoe Motor Corp., Jackson, Mich.

I. Finkelstein is now a member of the staff of the Motor Truck Department of the National Automobile Chamber of Commerce.

Alwin A. Gloetzner has been appointed president and general manager of the Covert Gear Co., Inc., Lockport, N. Y.

Victor Grieff, formerly a lieutenant in the U. S. N. R. F., is now research engineer for the American Bosch Magneto Corporation, Springfield, Mass.

J. A. Haskell is now assistant general sales manager of the Grant Motor Car Corp., Cleveland, O.

C. F. Hepburn has been made president and general manager of the Republic Motor Truck Co.

James R. Hayes has become assistant advertising manager of the Powrlok Company of Cleveland, O. Mr. Hayes comes to the company from the government service, having been connected with the Detroit office of the Director of Purchases, Storage and Traffic in the production of motor vehicles for the government.

P. W. Hood has been made sales manager of the Timken-Detroit Axle Co., Detroit, Mich. Mr. Hood, who is also assistant secretary, will be assisted by Frank N. Sim, advertising manager.

Charles G. Howison has been appointed New England representative of the Hudson Motor Specialties Co., Philadelphia, Pa.

Capt. John F. Hundt will have charge of the Chicago offices of the Goodrich-Lenhart Manufacturing Co., Hamburg, Pa.

William F. Jennings has been appointed vice-president of the Bound Brook Oil-Less Bearing Co., Bound Brook, N. J. Mr. Jennings has been eastern sales manager of the company for five years.

John Kelly, formerly New York district manager of the Edison Storage Battery Co., has been appointed general manager of the same company. He will make his headquarters at Orange, N. J., home of the firm.

Theo. T. Lane has been appointed director of purchases for Briscoe & Stahl, Detroit, Mich., American representatives of Bellanger Freres, France.

William F. Ling is now Detroit representative of Hobbs Mfg. Co., Worcester, Mass.

Earl P. Logan has been appointed director of sales of Kokomo Rubber Co., Kokomo, Ind.

Dan McAvoy has succeeded O. A. Olson as manager of the Omaha branch of the Pennsylvania Rubber Co., Jeannette, Pa.

Henry G. McComb has been made New York representative for the Weidely Motors Co. He will be located at 1790 Broadway.

R. B. McKinney has been made sales manager for the Morgan Manufacturing Co., Keene, N. H.

Edwin L. Malone has been appointed Cleveland district representative of the Hess Steel Corporation, Baltimore, Md. He will make the Cleveland Athletic Club his headquarters.

Harry P. Mammen, secretary and treasurer of the Traffic Motor Truck Corp., has left for Europe, where he will visit the leading cities, in order to assist Traffic dealers abroad in promoting their sales. He will also select dealers to become permanent representatives of the corporation in the various countries.

Wm. F. Melhuish, Jr., is now associated with Melhuish & Co., specialists in marketing automotive securities.

George W. Mixter has been appointed vice-president and general manager of the Pierce-Arrow Motor Car Co., Buffalo, N. Y. He comes to the Pierce-Arrow Co. from Deere & Co., and will still retain the vice-presidency of that company.

Russell Monroe has resigned as assistant advertising manager of the Ford Motor Co. to become assistant sales manager of the newly organized Ford Motor Co. branch in France.

Charles A. Neville has been appointed sales manager of the Hinkley Motors Corporation, Detroit, Mich. He was formerly in the sales department of the company.

Carl M. Page has severed his connection as advertising manager of the Fulton Motor Truck Co., New York City.

W. Carl Parker is now manager of the Reo Motor Car Co., Lansing, Mich.

E. T. Peterson has accepted a position as manager of the Buffalo branch of the Pennsylvania Rubber Co., Jeannette, Pa. He was formerly district sales manager of the Commercial Car Unit Co., of Philadelphia.

H. J. Porter has been promoted to the position of sales manager of the Timken Roller Bearing Co. He will make his headquarters at the general offices of the company at Canton.

W. B. Powell has severed his connection with John Millen & Son, Limited, Montreal, Can., and is now with Northern Electric Co.

Charles G. Reed has joined the Dunlap-Ward Advertising Co., of Cleveland, O. He will devote his time to publicity and sales promotion work for a number of the larger automobile and accessory firms.

L. T. Robinson has been appointed assistant advertising manager of the General Motors Truck Co.

C. G. Rowlette has succeeded C. W. Dickerson as treasurer of the Timken-Detroit Axle Co.

M. D. Salisbury has been made advertising manager of the Edison Storage Battery Co., Orange, N. J.

C. K. Senecebaugh, formerly general manager of the Rex Machine Co., is now vice-president and general manager of the Simplex Refrigerating Co., Chicago, Ill.

Arthur J. Slade has received his discharge from the army, after two years' service at home and abroad, and has resumed his practice as consulting engineer and motor transportation expert. His office is at 1790 Broadway, New York City.

Floyd Smith has been appointed manager of purchases of Pierce-Arrow Motor Car Co.

Pierce G. Smith has been promoted to vice-president of the American Malleables Co., Lancaster, N. Y., and Owosso, Mich.

L. H. Earle

Appointed eastern representative of the Buda Company since his discharge from the service. His headquarters will be 33 W. 42d Street, New York City.

E. D. Gibbs

Who is now advertising director of the B. F. Goodrich Rubber Company, Akron, Ohio. Mr. Gibbs was formerly with the National Cash Register Company.

C. H. Domville

Who has been appointed divisional sales manager for the "Ace" trucks, manufactured by the American Motor Truck Company, Newark, Ohio.

Wallace C. Hood

Who recently joined the Standard Motor Truck Company, Detroit, Michigan, as general sales manager.

C. N. Strieby has resigned as assistant advertising manager of the Fulton Motor Truck Co., New York City.

Paul Sutcliffe is now manager of the industrial truck and tractor department of the Edison Storage Battery Co., Orange, N. J. Mr. Sutcliffe was formerly advertising manager.

Walter K. Towers has been placed in charge of motor truck sales promotion for the Reo Motor Car Co., Lansing, Mich.

E. H. Trader, district manager of the American Rubber & Tire Company, has returned to Akron, O., after a three months' tour of the Pacific Coast, during which time he established numerous agencies with their main points of distribution at Portland, San Francisco and Los Angeles.

B. W. Twyman has been appointed manager of the factory now being constructed by the Nash Motors Co. in Milwaukee for the manufacture of a new four-cylinder car.

Charles F. Van Sicklen has resigned as secretary of the Van Sicklen Speedometer Co.

J. G. Vincent, vice-president of engineering of the Packard Motor Car Co., has received his commission as colonel in the Officers' Reserve Corps of the United States army.

H. G. Weaver will be in charge of the sales promotion department recently organized by the Hyatt Roller Bearing Co., Chicago, Ill.

W. W. Wildman has resigned as treasurer and general manager of the Portage Rubber Co., Barberton, O.

C. P. Wilson has been elected vice-president of the Norma Company of America, manufacturers of ball and roller bearings.

New Agencies

A. A. Peterson Company announces the opening of an Imperial Valley Buying and Selling Branch at 669-675 Main St., El Centro, Cal.

Broadway Tire & Rubber Co., Oakland, Cal., have added a full line of accessories to their business.

Douglas Boswell Co., Sacramento, Cal., has the agency for Acme trucks in California and Nevada, as far east as Elko County.

National Tire & Rubber Co., San Francisco, Cal., has been made distributor for Mohawk tires and tubes in Costa and Alameda counties.

Alfred Collyer Co., 83 Craig St., West, Montreal, Can., has been appointed Dominion agent for the Roller Smith Company.

J. Wadsworth Staff, 616 S. Michigan Blvd., Chicago, has been made sales department of the American Aero Co., manufacturers of the Juelson two-bladed fan which was recently described in our accessory columns.

Fairchild Motor Car Co., distributer of the Dodge and Peerless cars for New Orleans, has been separated into two concerns. One of these has retained the name of the original company and the other will be known as the United Motor Car Co. The Fairchild Co. will handle the Dodge car exclusively and the United will handle the Liberty car as well as the Peerless.

Lenhart Motor Truck Co., Minneapolis, Minn., has been incorporated with an authorized capital of $250,000. The officers of the company, which will act as distributer of Luverne trucks, include F. F. Lenhart, president; E. L. Leicher, vice-president; L. F. Lenhart, treasurer and manager, and F. A. Leicher, secretary.

F. R. Wetmore has opened offices at 518 Baronne St., New Orleans, La. He will distribute the Locomobile and the Riker truck.

Maccar Motor Truck Co. has been appointed distributor of the Maccar truck in Baltimore, Md. The company has opened its showrooms at 1010 W. North Ave.

Bearings Service Co., Detroit, Mich., announces the addition of four new branches, which are located at Fresno and Oakland, Cal.; Brooklyn, N. Y., and Milwaukee, Wis.

Grand Rapids Overland Co., Grand Rapids, Mich., has been appointed agent for the Acme truck.

Field Mfg. Co., Owosso, Mich., manufacturer of commercial bodies, is about to establish distributing agencies throughout the United States.

Maxwell Motor Sales Corp., St. Louis, Mo., has established a branch at 506 Vandeventer Ave. Its territory includes Illinois, Missouri, Kentucky, Arkansas, Tennessee, Alabama, Mississippi, Louisiana and eastern Texas. I. O. Taft is in charge.

Prince Auto Co., Omaha, Neb., has been purchased by John M. Robbins, formerly district manager for the Chalmers Motor Co. He will distribute the Elcar and the Fulton truck.

Advance Rubber Co., Brooklyn, N. Y., announces the opening of a branch in Los Angeles, Cal. The branch, which is under the management of William J. Hartman, is located at 721 S. Olive St.

Roblin Motors, Inc., has the agency for the Nash cars in Buffalo, N. Y.

United Motors Service has opened a branch in Buffalo at 1127-33 Main St.

Roller-Smith Co., New York City, makers of electrical instruments, announce the appointment of the General Machinery Co., Birmingham, Ala., as its agent in the states of Florida, Georgia, Alabama and Tennessee.

Carborundum Co., Niagara Falls, N. Y., announces the opening of branch offices and a warehouse in Detroit, Mich. Anthony Dobson will be in charge of the distribution for this district and will have his headquarters in the Burkhardt Building at Second and Larned Sts.

Paige-Ohio Co., Cleveland, O., has been incorporated for $250,000. It will have charge of the distribution of the Paige in the state of Ohio.

Gary Truck Sales Co., Cincinnati, O., has been appointed distributor of Gary trucks in that territory.

General Motors Truck Co. of Pittsburgh has been recently formed to handle GMC trucks in western Pennsylvania, West Virginia and part of Ohio. J. S. Haynes is general manager.

Removals and Trade Changes

Acme Motor Sales Co., Hartford, Conn., has moved from 334 Pearl St. to 256 Main St. It has added the Monroe to its line.

Continental Auto Parts Co. has been moved from Knightstown to Columbus, Ind. The new factory provides for six times as much floor space as was available in Knightstown.

Hoosier Motor Co., Goshen, Ind., is now known as the Hoosier Drilling Machine Co.

Bennett-Sustrich Co., Detroit, Mich., has purchased the body manufacturing business of the Southwick-Pom Co.

Theodore F. McManus, Incorporated, Detroit, Mich., has moved into new quarters at 48 Hancock Ave., East.

Edward V. Hartford, Inc. Jersey City, N. J., is now operating a new factory at West Side Ave. and Carbon Place. Their executive offices will be moved to 35 Warren St., corner Church St., New York City.

Automotive Exporter announces that it has moved its offices to 442-48 W. 37th St., New York City.

U. S. Fire Extinguisher Co., manufacturer of the "Auto-Fyr" extinguisher, has moved its general offices from New York City to Syracuse, N. Y.

Domestic Engineering Company, Dayton, O., builder of "Delco Light," has been merged with the General Motors Corporation, and will, in the future, be operated as a branch.

Wichita Motors Company has leased the plant formerly operated by the Midland Motor Car & Truck Co., Oklahoma City, and will operate it in addition to its original plant at Wichita Falls, Tex.

Bethlehem Motors Corp., Allentown, Pa., recently announced that it has absorbed the American Motors Co., Pottstown, Pa.

Geo. D. Gordon
Who has been made president of the newly reorganized Selden Truck Corporation, Rochester, New York.

P. B. Williams
Who has recently been appointed general sales manager of the Mac-Lar Battery Company, Inc., Detroit, Mich.

A. F. Osterloh
Recently made vice-president and general manager Goodyear Tire & Rubber Company of California.

Hal T. Boulden
Elected vice-president of the Selden Truck Corporation, of Rochester, N. Y. He will have charge of sales and advertising.

Atwater Kent Manufacturing Works, Philadelphia, Pa., announces that its name has been changed to the Atwater-Kent Mfg. Co. for corporate purposes.

Automobile Sales Corporation, distributor of Cadillac cars in Philadelphia, will be known, in the future, as the Neel-Cadillac Co.

Paige-Spokane Motors, Inc., has been reorganized. The new officers include Mark D. Hawkins, president; Jos. S. McLean, vice-president and treasurer; M. M. Worcester, secretary, and E. H. Jamieson, service manager.

New Incorporations and Capital Increases

Gray & Davis, Inc., Amesbury, Mass., is about to issue 54,452 shares of common stock. This doubles the present capital stock of the company.

Nelson Motor Car Company, Detroit, Mich., has increased its capital stock from $400,000 to $2,000,000.

Cooper Storage Battery Co. has been incorporated in Cincinnati for the purpose of manufacturing storage batteries for automobiles. The capital stock of the new corporation is $250,000.

Brown Body Corp., Cleveland, O., has been incorporated with a capital stock of $1,000,000. The company succeeds the Brown Auto Carriage Company. A new $500,000 factory is to be built.

Dunbar Tire & Rubber Co., Dunbar, W. Va., has been incorporated for the manufacture of tires and other automobile products. Its incorporate capital is $1,000,000, the greater part of which will be used in the construction and equipment of a modern plant.

Continental Spring & Axle Co. has been incorporated to manufacture axles for motor trucks, trailers and tractors. It will have its headquarters at Edgerton, Wis.

Oneida Electric Truck Co., Green Bay, Wis., has been organized with a capital of $300,000. It will manufacture an electric motor truck which will be added to the line of gas trucks manufactured by the Oneida Motor Truck Company.

Factory News

DuPont Motor Manufacturing Co., Wilmington, Del., has begun the construction of a new $20,000 machine shop.

Victor Gasket & Mfg. Co., Chicago, Ill., built a new plant which will treble its present capacity. The company is now planning an 8-story, 100 x 300 ft. warehouse and storeroom.

Fisher Body Co., Detroit, Mich., has received permits for the erection of a new six-story plant, 156 x 180 ft. Its estimated cost is $955,000.

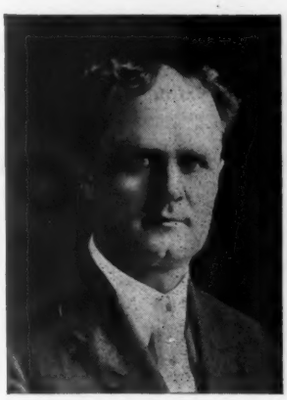
Fruehauf Trailer Co., Detroit, Mich., has broken ground for a new factory. The building will be of steel, brick and concrete construction, 100 x 300 ft. The plant will be modern in every respect and will be equipped with a large amount of new and up-to-date machinery.

Motors Metal Mfg. Co., Detroit, Mich., has erected a new building for enameling its goods and another to be used as a tank department.

Paige-Detroit Motor Car Co., Detroit, Mich., has purchased 31 acres of ground in Detroit. They plan to build here an addition to their factory which will be sufficiently large to increase the production of the company at least 125 per cent.

Transport Motor Truck Co., Mt. Pleasant, Mich., moved into its new plant on October 1. The new building has 52,000 sq. ft. of floor space ready for immediate use.

Kansas City Bolt & Nut Co., Kansas City, Mo., are planning to spend $1,000,000 in the construction of additions to their plant. They are going to build five open hearth steel furnaces and a 22-in. rolling mill.



Robert M. Sanderson
Who has resigned as superintendent of raw materials at the Miller Rubber Co., and is now general superintendent at the Amazon Tire & Rubber Co.

Corcoran-Victor Company, manufacturers of automobile lamps, are about to build an addition to their plant, Cincinnati, O. The building will cost about $40,000.

Trailmobile Co., Cincinnati, Ohio, reports that the work on the first unit of its new plant is progressing rapidly. This building will be 200 x 500 ft.

J. W. Murray Company, manufacturer of fenders, hoods, gasoline tanks and other automobile accessories, is to build a plant in Cleveland, Ohio.

Vita Manufacturing Co., Cleveland, O., manufacturer of the Rogers Magneto, is erecting the first unit of the larger plant it is planning. The new structure, which is 252 x 132 ft., is a two-story, modern fireproof concrete building.

Zenith Tire & Rubber Co., Cleveland, Ohio, plans to establish its main factory at Willoughby, a suburb of Cleveland.

C & C Cooper Co., builders of engines, are planning a $500,000 addition to their plant in Mt. Vernon, O.

Knox Tire & Rubber Co., Mt. Vernon, O., is about to build a new plant costing $300,000.

Pennsylvania Rubber Co., Jeannette, Pa., has purchased a large tract of land close by its factory, upon which it will erect modern homes for its employes.

Bearings Company of America, Lancaster, Pa., announces that it is about to construct a building of the latest type which will give about 60,000 additional sq. ft. to be devoted to the manufacture of thrust bearings.

Four Wheel Drive Auto Co., Clintonville, Wis., announces that work on its Canadian plant is progressing rapidly and that its home plant will soon be relieved of all Canadian business.

Winther Motor Truck Co., Kenosha, Wis., is about to purchase a tract of land in Milwaukee, Wis., on which it contemplates erecting a large factory to be operated in conjunction with the one at Kenosha.

Harley-Davidson Motor Co., Milwaukee, Wis., is to build an addition 120 x 225 ft.

Oshkosh Motor Truck Co., Oshkosh, Wis., has purchased land at High and Forest Sts., where it will build its plant, the first unit of which will be 150 x 300 ft.

Ralph Brown

The Standard Parts Co., Cleveland, O., lost one of the valuable men of its organization when Ralph Brown, sales engineer for the Perfection Spring Division, died of pneumonia on September 22. Mr. Brown joined the Perfection Spring engineering staff in 1915. He was thirty-two and is survived by his parents, a brother and a sister.

Roy Davey
General sales manager of Bethlehem Motors Corp., Allentown, Pa. Mr. Davey was assistant sales manager of the company.

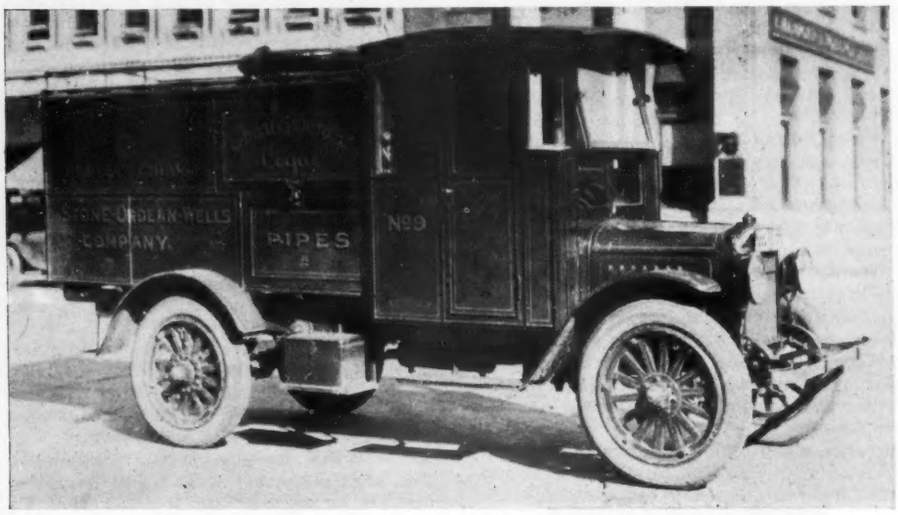
B. M. Value
Who has been appointed foreign sales manager of the J. I. Case Plow Works, Racine, Wis.

Mark A. Smith
Who is now sales engineer in the truck and tractor department of the Midwest Engine Co., Indianapolis, Ind.

Torbert Vickroy
Who has been elected assistant secretary of the Traffic Motor Corp., St. Louis, Mo.

Republic Truck Carries Tobacco for Iron Miners

One of the busiest motor trucks in the Missabe iron range of Northern Minnesota is the "cash truck," which weekly makes the rounds of the Iron Range cities for Stone-Ordean-Wells Co., of Duluth. This company is one of the largest wholesale grocery concerns in the district, and to give quick service to the cigar stores throughout the range a 1-ton Republic truck was fitted with a body for carrying all manner of cigars, tobaccos and "smoke" supplies. Its headquarters are at Virginia, Minn., and each week it distributes tobacco to all the stores from Hibbing to Aurora, covering over 250 miles each week in this work. All sales are for cash, and this manner of distribution and sales makes it easy for both the company and its customers to get the best of results. The truck travels on pneumatics.



This One-Ton Republic, Fitted With a Body for Carrying All Manner of Cigars, Tobacco and Other Supplies, Makes Weekly Runs Covering 250 Miles, Supplying Cigar Stores Throughout the Missabe Iron Range

Automobiles Termed "Goods"

Governor Harding, of the Federal Reserve Board, in reply to the request of the National Automobile Chamber of Commerce to have automobiles classed as "readily marketable staples," states "readily marketable staples" as defined in the Federal Reserve Bulletin does not refer to automobiles. The definition follows:

"A readily marketable staple may be defined as an article of commerce, agriculture, or industry of such uses as to make it the subject of constant dealings in ready markets with such frequent quotations of prices as to make (a) the price easily and definitely ascertainable, and (b) the staple itself easy to realize upon by sale at any time."

According to the Board this does not include automobiles. If, however, the seller of goods, not necessarily readily marketable staples, ships these goods to a buyer who arranges a bankers' acceptance credit, a draft drawn by the seller on the buyer's bank and accepted by that bank, comes within the terms of this section provided that the shipping documents covering those goods were attached at the time of acceptance. There is no doubt in this instance that automobiles are "goods" and that a draft secured at the time of acceptance by a bill of lading covering automobiles in transit is eligible for acceptances by a national bank under the terms of the law, provided that it complies with the other provisions of the Federal Reserve Act and the Board's regulations.

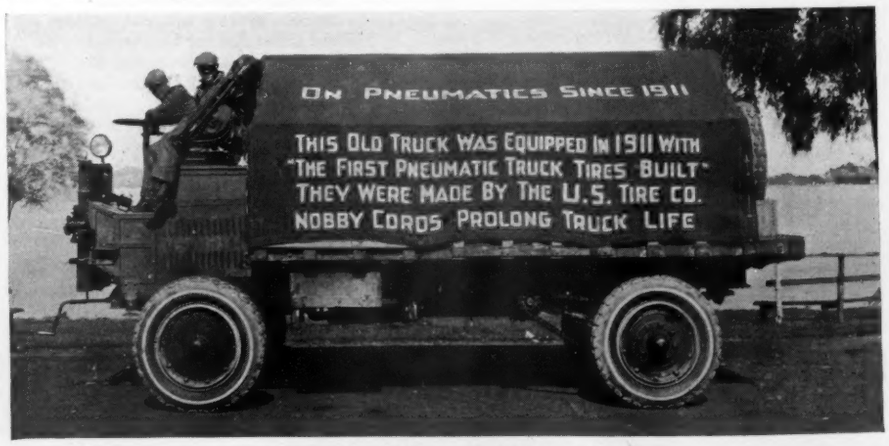
Service Managers to Hold Convention

NEW YORK CITY, Oct. 10.—The National Automobile Chamber of Commerce has authorized a convention of service managers to be held at Detroit for two or three days during the week of November 10. Many vital issues involved in the question of service will be discussed and visits will be made to plants of several leading Detroit manufacturers.

The N. A. C. C. will grant mileage at the rate of five cents per mile and a fee of ten dollars per day to the representative of each member company in attendance. Other representatives of members will be welcome.

Itinerary of International Trade Conference Tour

WASHINGTON, D. C., Oct. 6.—The Chamber of Commerce of the United States has announced the itinerary of the International Trade Conference Tour. The party will leave New York for Atlantic City on Friday, October 17. It will arrive in Philadelphia on October 26, from here it will go to Baltimore on October 28. It will arrive in Washington, from Baltimore, on October 30. It will remain in Washington until November 2, when it will entrain for Pittsburgh. November 3 and 4 will be spent in Pittsburgh and the tour will arrive in Cincinnati on the 5th, where it will spend only a few hours and depart for St. Louis. About twelve hours will be spent in St. Louis, November 6, from which place the party will travel to Kansas City. November 7 and 8 will be spent in Kansas City. The party is scheduled to arrive in Minneapolis and St. Paul on November 10. It will leave St. Paul on the eleventh and arrive in Chicago on the twelfth. November 12 and 13 will be spent in Chicago. From here the party will go to Detroit, arriving November 14. It will leave Detroit on the fifteenth and arrive in Cleveland on the sixteenth. On the evening of the eighteenth the conference will leave for Buffalo, where it will spend two days, including a trip to Niagara Falls. It will arrive at Rochester on November 20. Leaving Rochester on November 21, it will arrive in Boston November 22, where it will remain until November 24, when it will leave for New York. The final days of the tour, November 25 to 28, will be spent in New York.


ON PNEUMATICS SINCE 1911
THIS OLD TRUCK WAS EQUIPPED IN 1911 WITH
"THE FIRST PNEUMATIC TRUCK TIRES BUILT"
THEY WERE MADE BY THE U.S. TIRE CO.
NOBBY CORDS PROLONG TRUCK LIFE

Old Reliance Trucks Still Going Strong

An old Reliance motor truck, with a history dating back to the days of motor truck antiquity, recently left Detroit on a 5,000-mile tour of the Middle West. A second one of these trucks with a similar history, started from Detroit on a similar trip which will carry it many thousand miles through the East. These trucks have been brought out of obscurity into limelight by the United States Tire Company, who equipped them in July, 1911, with pneumatic truck tires. The main purpose of this tour is to give visible proof to truck owners that pneumatic truck tires prolong truck life. A staff of pneumatic tire experts aboard each truck will carry on an educational campaign to show motor truck owners the advantages of the uses of pneumatic truck tires. A modern truck equipped with pneumatics accompanies each old truck and demonstrations will be given of approved methods of mounting, demounting and inflating the big tires.

Steel Fabricators *vs.* Steel Producers

WASHINGTON, Oct. 1.—Arguments in the on-coming controversy between the steel producing industry and the steel fabricating and manufacturing industries over abolition of the long-established system of basing prices of raw steel throughout the United States on a single basing point at Pittsburgh, were made public at the Federal Trade Commission today. Five great steel consuming interests have voluntarily asked the Federal Trade Commission to assume jurisdiction, and declare the system in violation of the Clayton anti-trust law and the Federal Trade Commission law as constituting illegal price discrimination and an unfair method of competition in interstate commerce.

On request of the Commission for expressions of opinion from all parties interested, 43 interests have submitted statements opposing the applications for abolition of the system, and 36 have answered favoring a change—a total of 79.

Not only the entire steel industry and allied and dependent producing and manufacturing industries would be affected, Judge Gary and others pointed out in urging the Commission to act, but scores of other industries in no way related to the steel industry would be affected.

Should the Commission decide to assume jurisdiction and adjudicate the long-mooted question of a single or plural basing points, the case, according to Judge E. H. Gary, chairman of the U. S. Steel Corp., would probably develop into "the greatest lawsuit in the history of the country."

Bituminous Treatment for Farm Roads

WASHINGTON, D. C., Sept. 27.—Engineers of the Bureau of Public Roads of the United States Department of Agriculture claim that bituminous material may be successfully applied on any farm road that has already been constructed of stone or gravel and that is in a thoroughly compacted and reasonably smooth condition. The road should be thoroughly cleaned of all dust and the bitumen applied with an ordinary sprinkling pot, from which the sprinkler top has been removed, and the nozzle flattened into a rectangular opening about ¼ in. wide. Care should be taken to have an even distribution. About ½ gal. should be applied to each sq. yd. of road surface. After the bituminous material has been applied, clean gravel or stone chips should be placed evenly over the surface and, if possible, rolled with a lawn or field roller. Clean, coarse sand may be used as covering material. This should be spread in a sufficient quantity to prevent the bituminous material from sticking to the tires of passing vehicles. This treatment should not be used where drainage from stables is likely to flow over it or where mud puddles form. Where a more durable pavement is needed, a slab of concrete should be laid.

New York Has Increased Registration

NEW YORK CITY, Sept. 29.—Figures recently announced by Francis M. Hugo, Secretary of State, show that the increase in registration of motor vehicles during the first six months of 1919 has been phenomenal. A comparison of figures between August 1, 1918 and 1919, shows this gain:

	Aug. 1, 1918	Aug. 1, 1919	Increase
Pleasure	346,100	398,560	52,460
Omnibus	16,859	19,056	2,197
Commercial	69,160	83,076	13,916
Trailers	1,887	1,633	Dec. 254
Dealers	2,220	2,446	226
Motorcycles	26,415	21,626	Dec. 4,789
Chauffeurs	129,076	150,674	21,598

New Headlight Law in Pennsylvania

HARRISBURG, PA., Sept. 26.—According to the recently enacted headlight law "no lights of more than thirty-two candlepower shall be used on any motor vehicle, and all lights in excess of four candlepower equipped with reflectors shall be so deflected that no dazzling rays of light, shall, at a point seventy-five feet or more ahead of the lamps, rise more than forty-two inches above the level surface on which the vehicle stands."

It likewise provides that the rays from movable spotlights and searchlights, which come under these restrictions, shall at no time extend to the left of the axis of the motor vehicle. Headlights must illuminate the highway for a distance of 200 ft. when the vehicle is in motion and the road must be illuminated for five ft. to the right at point twenty ft. in front of the lamps.

Failure to comply with this law is penalized by the payment of a substantial fine.

The State Highway Commissioner will conduct a series of laboratory and road tests in the near future to determine which of the standard lighting devices for motor vehicles comply with the provisions of this law.

Decline of the Horse in New York City

An investigation made in the city of New York by the Field Agent for that State of the Bureau of Crop Estimates, United States Department of Agriculture, shows that the horse is rapidly becoming extinct.

The census enumerators of 1910 found 128,224 horses in that city, including about 3000 horses on farms. By the stable enumeration of the Sanitary Bureau of the Board of Health, 108,036 horses were found in 1917 and 75,740 horses in 1919. Assuming that the enumerations of the two agencies are fairly comparable, it appears that 16 per cent. of the number of horses of 1910 had been lost by 1917 and 41 per cent. by 1919. Over 25 per cent., or one-quarter, were lost in the last two years and only 16 per cent. in the preceding seven years. These are averages for Greater New York, and the progress of the movement has varied in the several boroughs of the city.

Of the total horses of the entire city, 60 per cent. are in Manhattan and Bronx Boroughs and 31 per cent. in Kings Borough, or 92 per cent. in the three boroughs, and nearly as large a fraction, if the Bronx is excluded.

Nebraska to Have Seedling Mile of Lincoln Highway

DETROIT, MICH., Sept. 15.—The Lincoln Highway Association promotes the establishment of permanent road construction in those counties where the state funds warranted it by educating the people up to the need and value of permanent highways. To show them the benefits of concrete highways, the Association constructs a mile of concrete road in these counties. This road has become known as the "seedling" road and frequently results in the demand for additional construction of the same kind from the inhabitants of the county. Such a road, for which the government has just let a contract, is to be built in Nebraska, west of Fremont.

Unique College Course

CINCINNATI, O., Sept. 30.—The National Safety Council has become affiliated with the University of Cincinnati for the purpose of carrying out an unusual program in the fields of education and accident prevention. The program includes the establishment of an industrial medicine division at the University where medical students and graduate physicians will be given special training in industrial medicine and industrial relations. This will include sanitation and all the fundamentals of safety work.

Charles W. Reid

Who has been placed in charge of the Transportation Bureau of the Federal Highway Council. This bureau supersedes the Highways Transport Committee of the Council of National Defense, of which Mr. Reid was chief executive. Prior to his connection with this committee he was vice president of Rathbone, Sard & Company, Albany, N. Y.

Sees Big Future for Electric Trucks

In his report to the National Electric Light Association, New England section. at their annual convention at New London, Conn., Day Baker, chairman of the Electric Vehicle Committee, outlined the effect which the war had upon the electric vehicle industry, which was in a comparatively dormant condition, "owing to the difficulty in securing storage batteries used in all branches of the service, and vehicle materials which were needed by the Government to construct trucks for use in overseas war territory.

The report further states that even under these difficulties, approximately 112 electric passenger and commercial vehicles have been added to the Electric Vehicle Fleet of New England.

These additions, however, do not include the many small industrial electric trucks which have been installed in many of New England's manufacturing and textile plants, which must number upwards of 200.

Attention is called to the discontinuance of the largest electric truck manufacturing plants in the country, which loss is to be offset by the fact that "one of the older and smaller electric vehicle companies, which has built many good and efficient electric trucks, has been taken over by a coterie of New England business men who are now equipping a large and up-to-date manufacturing plant for the construction of electric trucks on a large scale. Many of the leading spirits of the electric vehicle industry, which closed its doors during the war period, and who thoroughly believe in the electric truck for the city hauls, are to be connected with this new plant."

Mr. Baker also calls attention to the economy effected by the electric truck in short haul work, where stops are frequent and freight abundant. The report is concluded with the statement "that electric trucks in our city streets will become more common than the horse."

Educational Meeting to be Held by Motor Truck Association of America

NEW YORK, Oct. 7.—The Motor Truck Association of America, Inc., will continue to feature educational and instructive lectures by specialists in the commercial car industry at its monthly meetings this fall and winter. The first regular monthly meeting will be held Wednesday evening, October 22, at eight o'clock at the Automobile Club of America. The committee has arranged for Joseph Holle, of the McCord Mfg. Co., to give a talk on the care and maintenance of radiators. This is a very timely subject, in that the cold weather is approaching. The lecture will be illustrated by concrete examples.

C. B. Gale, president of Bournonville Welding Co., of New York, is to speak on the use of oxy-acetylene welding for truck repairs, as well as give an outline of welding. Efforts are being made to bring out every member at these meetings, which proved so popular last winter. The committee is arranging a schedule of interesting and practical subjects having to do with economical operation and maintenance of trucks.

Federal General Utility Farm Body

The Federal Motor Truck Co., of Detroit, Mich., announces a special new body for farm trucks which is instantly adaptable to any kind of farm load.

This body, which can be furnished in 1½ and 2 ton capacities, combines in one frame all the requirements of the farmer for a general utility truck body. In one form it is a stock rack with water tight under body. The Federal company believes that this body fully supplies the requirements of a body for transporting live stock quickly and without loss in weight or time.

As a high grain tight body, the truck is arranged to carry its full capacity of grain in a body which makes impossible loss through leakage through the truck body.

The flareboard express body is intended for the general purposes that come up around the farm. It can be used for hauling implements and almost anything that is not provided for by the other types of body.

Two additional forms to which the body adapts itself is the basket rack arrangement which provides a 12-inch flareboard over each side of the body, with 12-inch vertical extensions to these. Baskets of produce are thus easily handled and the body can also be used to carry passengers. In addition to this the hay rack arrangement by which the truck can be converted into a hay wagon in which 1½ tons or more of loose hay can be handled, is also provided.

Studebaker Not to Discontinue Farm Wagon

SOUTH BEND, IND., Sept. 29.—A. R. Erskine, president of the Studebaker Corp., is calling attention to the fact that in his announcement of June 23, that the corporation would discontinue the manufacture of its spring vehicle and harness lines, he stated specifically that it would continue the manufacture of farm wagons and trucks. However, this statement has been misconstrued by some and the company again makes the emphatic statement that "Studebaker has not quit making wagons and furthermore does not intend to quit."

Government Holds First Car Sale

WASHINGTON, D. C., Sept. 25.—The first sale of condemned government motor vehicles has been held at Camp Holabird, Md. The material disposed of brought a total of $12,027.

Gill Manufacturing Company Holds Convention

During the week of August 24th, the Gill Manufacturing Company held a convention of its branch managers in Chicago. As the Gill Company has branches in practically every important city from coast to coast, this was quite a gathering, over fifty men being present. The surprisingly successful sales season just passed naturally resulted in a very enthusiastic gathering. The men inspected the ground which has just been broken for the new Gill factory to be built in Chicago to take care of the demand for Gill piston rings, also the new Gill aero carburetor, which this company will place on the market immediately. The photograph shows a group of Gill branch managers and officials at the close of the convention.

KEY OF ABBREVIATIONS

Used in the Specifications of Commercial Cars Listed on the Pages Following

Own—Own Make
Opt—Optional

Engine: Cont—Continental
Her—Hercules
H-Sp—Herschell-Spillman
Lite—Light Mfg. & Foundry Co.
Lyco—Lycoming
Ster—Sterling
Vict—Victory
Wau—Waukesha
Wis—Wisconsin

Valve Location: L—ELL-Head
T—TEE-Head
O—Overhead

How Cooled: C—Centrifugal Pump
G—Gear Pump
P—Water Pump
T—Thermo-Syphon
W—Water

Radiator (Make or Type): Bus—Bush
Can—Candler
EM—English-Mersick
Eur—Eureka
Fed—Fedders
Flex—Flexo
GO—G. & O.
Har—Harrison
Hovn—Hooven
Idl—Ideal
JMS—Jamestown
Lng—Long
McC—McCord
May—Mayo
MR—Marlin-Rockwell
Per—Perfex
R-T—Rome-Turney
Spi—Spirex
Stan—Standard

C—Cellular
T—Tubular
H—Honeycomb

Tires: (Solid unless otherwise stated)
*—Pneumatic
†—Dual
S—Steel
T—Triple

Lubrication: C—Centrifugal Pump
Fo—Force-Feed
FG—Force and Gravity
FS—Force and Splash
Sp—Splash Feed
P—Water Pump

Carburetor: B&B—Ball & Ball
Cart—Carter
Ens—Ensign
Flch—Flechter
Holl—Holley
John—Johnson
Mar—Marvel
Mas—Master
Mill—Miller
Strm—Stromberg
Shk—Shakespeare
Sheb—Schebler
Spc—Special
Till—Tillotson
Zen—Zenith

Ignition System: (Make or Type)
At-Kt—Atwater Kent
Au-L—Auto-Lite
Bat—Battery
Bosh—Bosch
Berl—Berling
Conn—Connecticut
Delc—Delco
Dix—Dixie
Eism—Eisemann
King—Kingston
Mag—Magneto
NE—North East
POL—Prest-O-Lite
Sim—Simms
Spld—Splitdorf

Engine Starter: Au-L—Auto Lite
Bosh—Bosch
Bij—Bijur
Dyn—Dyneto
G&D—Gray & Davis
L-N—Leece-Neville
NE—North East
West—Westinghouse

Clutch: B—Borg & Beck
C—Cone
D—Disc
F—Fuller
G—Detroit Gear & Machine
H—Hartford
L—Brown-Lipe
M—Merchant & Evans (Hele-Shaw)
U—Muncie
W—Warner
O—Own

Transmission: B-Lipe—Brown-Lipe
Cott—Cotta
Covt—Covert
D-Sea—Driggs-Seabury
Det—Detroit
Durst—Durston
Full—Fuller
G-Lee—Grant-Lees
I-Cl—Individual Clutch
MM—Mechanics Machine Co.
Munc—Muncie
Plan—Planetary
Prog—Progressive
Rock—Rockford
Selec—Selective
Warn—Warner

Drive: B—Bevel Gear
C—Chain
Ct—Concentric Spur
F—Friction
I—Internal Gear
O—Own
R—Roller
S—Shaft
SB—Spiral Bevel
Sp—Spur
W—Worm

Universal: Arv—Arvac
Bld—Blood Brothers
Flex-Flexite
Hart—Hartford
K-B—Kinsler-Bennett
M—Merchant & Evans
Spic—Spicer
Ster—Sterling
Ther—Thermoid
UM—Universal Machine Co.
UP—Universal Products Co.

Rear Axle: Cel—Celfor
Chi—Chicago
Cl—Clark
Emp—Empire
Rock—Rockford
Russ—Russel
Sals—Salisbury
Shel—Sheldon
Timk—Timken
Torb—Torbensen
W-M—Weston-Mott

Flot—Full Floating
½-Fl—Semi-Floating
¾-Fl—¾ Floating
⅞-Fl—⅞ Floating

Spring Suspension:
CC—Cleveland-Canton
Det—Detroit
GC—Garden City
IC—Iron City
Kal—Kalamazoo
Mar—Maremont
Math—Mather
Nat—National
Row—Rowland
Per—Perfection
Shel—Sheldon
SP—Spring Perch
Stan—Standard
Ster—Sterling
Tut—Tuthill
US—United States

Cant—Cantilever
Elip—Full Elliptic
S-El—Semi-Elliptic
¾-El—¾-Elliptic
S&C—Semi-Elliptic and Cantilever
S&¾—Semi-Elliptic and ¾-Elliptic

Steering Gear:
CAS—C. A. S. Products Co.
Dit—Ditwiler
Gem—Gemmer
Jac—Jacox
Lav—Lavine
W—Worm
Warn—Warner
Wohl—Wohlrab

Governor: C—Centrifugal
Cont—Continental
Del—Delaney
Dup—Duplex
McC—McCanna
Mer—Merrill
Mon—Monarch
Pier—Pierce
Rug—Ruggles
Simp—Simplex
Wau—Waukesha

EXTRA ABBREVIATIONS USED ON ELECTRICS

Battery: Exid—Exide
Edis—Edison
Phil—Philadelphia
Motor: Gn-El—General Electric Co.
West—Westinghouse
Controller: Gn-El—General Electric Co.
West—Westinghouse

UNIVERSITY OF

Commercial Car Specifications—Corrected Monthly

The Specification, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks and Electric Commercial Cars Will be Found at the End of Gasoline Commercial Cars

(Where prices are not given they may be had on application to the manufacturer)

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr.Cent of Weight on Rear Wheels
800 Pounds																												
Overland	1777	900	Own	4	3⅜x5	18.2	4	1/8	L	T	C	FS	Till	Conn	Au-L	C	Selec	3	Own	B	¾-Fl	104	S&C	31x4*	31x4*	Own	.....	63.8
Pony	800	320	Own	4	2¾x4	12.8	3	1/8	L	T	H	FS	Strom	At-K	.....	.....	Fric	3	Dead	Own	Ch	92	Tut	28x3	28x3	Own	.....	60
1000 Pounds																												
Corliss 1919	1450	715	LeRoi	4	3½x4½	16.9	4	....	....	....	T	FS	Sheb	Dix	Al-Ch	B	Covt	3	Arv	BG	½-Fl	103	Har	31x4*	31x4*	Wohl	.....	80
Dodge	1975	935	Own	4	3⅞x4½	24	3	1/8	L	C	T	FS	Stew	Delc	NE	D	Selec	3	Own	SB	Flot	114	Det	33x4	33x4	Own	.....	41
Ellsworth 25A	2100	....	Lyco	4	3½x5	18	3	1/8	L	C	T	Sp	Cart	Conn	App	C	GLee	3	Stan	BG	Gem	108	Shel	30x3½*	30x3½*	Fos	.....	70
Indiana T	3400	2150	Wau	4	3¾x5¼	22.5	3	¼	L	C	T	Sp	Strm	Eism	.....	B	Selec	3	Acme	W	½-Fl	135	S-El	34x3½	34x4	Wohl	Wau	65
Vim 21	1900	1095	Own	4	3 x4½	14.4	3	1/8	L	C	McC	CSp	Zen	Dix	.....	C	Selec	3	Spic	B	Own	108	Shel	31x4*	31x4*	Jac	.....	.....
1200 Pounds																												
Overland	2179	....	Own	4	4 ⅛x4½	27.2	2	3/8	L	T	C	FS	Till	Conn	Au-L	C	Selec	3	Own	SB	¾-Fl	106	S-El	33x4½*	33x4½*	Own	.....	68.8
1500 Pounds																												
Atlas 19	2320	1260	Lyco	4	3½x5	19.6	3	1/8	L	T	H	Sp	Cart	Remy	Remy	B	Selec	3	Arc	B	Hess	118	Row	32x4*	32x4*	CAS	.....	60
Diehl A	2400	1575	Cont	4	3½x5	19.6	3	....	....	T	H	FS	Zen	Bosch	.....	B	Durst	3	K-B	I	Torb	115	Mar	34x4½*	35x5*	Jac	.....	90
Dispatch G	2200	1200	Wis	4	3¾x5	22.5	3	1/8	L	C	T	Fo	Rayf	Bosch	USL	O	Own	4	Bld	I	Dead	120	Tut	34x4*	34x4*	W	.....	50
Garford 25	3900	1890	Buda	4	3¾x5½	22.5	3	1/8	L	C	T	Sp	Strm	Spld	.....	L	.....	3	.....	W	Timk	135	Per	36x3½	36x4	Ross	Mon	.....
G. M. C. 16	2940	1495	Cont	4	3¾x5	22.5	3	1/8	L	C	McC	FS	Mar	Eism	.....	D	Selec	3	UM	B	WM	132	Det	35x5*	35x5*	Jac	Mon	67
Grant 12	2300	1125	H-Sp	4	3¼x5	16.9	3	¼	L	C	T	Fed	FS	Cart	Spld	Bij	B	GLee	3	Arv	I	Torb	115	Per	32x4*	32x4*	Dit	.....	58
International H	2800	1550	Own	4	3½x5¼	19.6	3	1/8	L	C	Own	FS	Holl	Bosch	Own	D	Own	3	Own	I	Own	115	.....	36x3	36x3½	Ross	Own	50
Old Hickory M	2100	995	Lyco	4	3½x5	16.9	3	1/8	L	C	C	Sp	Cart	Cov	Dyn	C	Selec	3	Own	B	½-Fl	112	.....	33x4*	33x4*	W	.....	60
Oldsmobile	2700	1250	Own	4	3 ⅛x5¼	21.7	3	....	O	C	Own	Fo	Zen	Au-L	.....	C	Selec	3	Hart	.....	Torb	128	S-El	35x5	35x5	W	.....	70
Rainier R11	2350	1750	Cont	4	3½x5	19.6	3	1/8	....	C	Har	....	Zen	Mag	.....	L	B-Li	..	Hart	.....	Timk	125	Per	34x4½	34x4½	Lav	Mon	66⅔
Reo F	2525	1285	Own	4	4½x4½	27.2	3	1/8	L	C	Own	Sp	John	Remy	Remy	O	Own	3	Own	B	Own	128	Penn	34x4½*	34x4½*	Own	.....	62½
Shaw M-2	....	1650	Cont	4	3¾x5	22.4	3	1/8	L	T	T	FS	Zen	Bosch	.....	D	B-Li	3	Spic	BG	Timk	116	Per	32x4*	32x4*	Gem	.....	65
Stewart 11	2400	1195	LRoi	4	3½x4½	15.6	3	1/8	R	T	C	FS	Zen	Eism	.....	M	MM	3	Hart	I	IC	110	Det	32x4	32x4	CAS	LeRoi	66¾
Texan C37	2300	1200	Lyco	4	3½x5	19.6	3	1/8	L	T	H	FS	Cart	Delc	Dyn	B	Munc	3	UP	B	Flot	115	Cant..	33x4	33x4	CAS	.....	60
Vim 26	2450	1350	Own	4	3 x4½	14.4	3	1/8	L	T	McC	CSp	Zen	Dix	.....	C	Selec	3	Spic	B	Own	127	Shel	32x4½*	32x4½*	Jac	.....	.....
White 15	2960	2400	Own	4	3¾x5⅛	22.5	3	....	L	C	C	FS	Own	Mag	.....	D	Selec	4	Own	B	Own	133	.....	34x4½*	34x4½*	Own	.....	.....
1 Ton																												
Acason R	3650	....	Wau	4	3¾x5¼	22.5	3	¼	L	P	Can	Sp	Sheb	Eism	.....	F	Full	3	Bld	W	Timk	142	Det	36x3½	36x5	Ross	Wau	73
Acme B	3376	1950	Cont	4	3¾x5	22.5	3	1/8	L	T	GO	FS	Rayf	Eism	G&D	B	Cott	3	Bld	W	Timk	130	Det	34x3½	34x5	Ross	Dup	80
All-American A-A	2600	1295	H-Sp	4	3¼x5	16.9	3	1/8	L	T	C	Stan	FS	Strm	Simms	.....	B	GLee	3	UP	I	Torb	130	Det	33x4*	32x4	Ross	.....	75
Apex C	2870	1395	Buda	4	3½x5⅛	20	3	1/8	L	C	Can	P	Strm	Au-L	Opt	F	Full	3	Det	I	Torb	130	Det	33x4*	32x3½	Lav	.....	70
Beck-Hawkeye A	2800	1550	Cont	4	3½x5	....	....	....	....	T	Har	Sp	Strm	Bosch	.....	F	Full	3	Bld	I	½-Fl	124	Hig	34x3	34x4	Lav	Pier	75
Bessemer G	2900	1600	Cont	4	3½x5	19.6	3	1/8	L	T	C	FS	Zen	Bosch	.....	F	Full	3	Arv	I	Torb	124	Per	34x3½	34x4	Ross	.....	57
Briscoe T-34	....	....	Own	4	3¾x5	18.9	3	1/8	L	T	C	FS	Buick	Bat	Au-L	C	Own	3	UM	....	Russ	121	.....	33x4	34x3½	Lav	.....	.....
Chevrolet T	2840	1325	Own	4	3 ⅛x5¼	22.5	3	1/8	L	T	Har	FS	Zen	Remy	Au-L	C	Warn	3	Arv	W	½-Fl	125	Hess	33x4*	35x4*	Warn	Mon	.....
Columbia F	2800	1750	Cont	4	3¾x5	22.5	3	1/8	L	T	T	FS	Shk	Dix	.....	B	Covt	3	Spic	I	Russ	126	Per	34x3½	34x4	Own	Pier	70
Clydesdale 32	3400	....	Cont	4	3¾x5	22.5	3	1/8	R	L	T	Sp	Zen	Bosch	.....	L	B-Li	3	Spic	W	Timk	144	Stan	34x3½	34x5	Ross	Own	.....
Commerce E Ch	2900	1500	Cont	4	3¾x5	22.5	3	1/8	L	L	L	Sp	Zen	Eism	Imp	C	Selec	3	Spic	I	Torb	126	Det	35x5*	35x5*	Jac	.....	80
Conestoga-20	3300	2100	Cont	4	3½x5	19.6	3	1/8	L	T	EM	Sp	Strm	Simms	.....	F	Full	3	.....	W	Wis	128	S-El	34x3½	34x5	Ross	.....	90
Corbitt E	3250	2150	Cont	4	3¾x5	22.5	3	1/8	L	T	McC	Sp	Strm	Eism	.....	D	Full	3	Hart..	W	Shel	130	Shel	34x3½	34x4	Ross	Simp	75
Dart E	3200	2100	Buda	4	3¾x5½	22.5	3	¼	L	L	T	Sp	Zen	Eism	.....	F	Full	3	Arv	W	Timk	130	Per	34x3½	34x5	Ross	.....	80
Day-Elder A	3000	1775	Cont	4	3½x5	19.6	3	1/8	L	T	Bus	FS	Zen	Berl	.....	D	Covt	3	Hart	W	Wis	128	Shel	34x3	34x4	Ross	.....	70
Dearborn A	2100	1175	GBS	4	3¾x4¼	22.5	3	1/8	L	L	H	Sp	Strm	Dix	.....	GB	GLee	3	Arv	Ch	CC	125	C-C	30x3½*	32x3½	Dit	.....	90
Denby 12	3100	1950	Cont	4	3½x5	19.6	3	1/8	R	L	T	Sp	Strm	Eism	.....	F	Full	3	UP	I	Russ	124	Det	34x3	34x4	Ross	Mon	73
Diamond T-J 5	3275	2360	.....	4	3½x5	19.6	3	1/8	L	T	T	FS	Strm	Bosch	.....	L	.....	3	Spic	W	.....	132	Math	36x3	36x4	.....	Pier	.....

Douglas C	2750	1700	Buda	4	3½x5½	22.5	3	....	L	T	Own	FS	Sheb	Eism	.....	F	Full	3	Arv	I	Torb	122	Own	34x4½	35x5	Ross	.....	65
Famous B-10	3000	1690	Cont	4	3½x5	19.6	3	¼	L	T	T	Sp	Strm	Eism	.....	F	Full	3	Bear	I	Cl	120	Det	36x3½	36x4	Ross	Mon	75
Federal S	3500	....	Cont	4	3¾x5	22.5	3	¼	R	T	T	FS	Zen	Eism	.....	B	Own	3	.....	W	Timk	132	Math	35x5*	36x6*	Gem	Pharo	75
Ford T	1450	550	Own	4	3¾x4	22.5	3	¼	L	L	T	SG	Holl	Mag	.....	D	Plan	2	.....	W	½-Fl	124	.....	30x3½*	32x4½*	.....	.....	.....
Forschler A	3450	2100	Cont	4	3½x5	19.6	3	¼	L	C	Own	FS	Zen	Bosch	Opt	F	Full	3	Hart	W	Shel	120	Own	34x3	34x4	Ross	Dup	.....
Gary G	4200	.....	.....	....	4¼x5½	.....	.....	.....	.....	.....	.....	Fo	Strm	Eism	.....	.....	Selec	...	Ray	W	½-Fl	144	S-El	36x3½	36x5	.....	.....	.....
Giant 15	2950	1950	Cont	4	3½x5	19.6	3	¼	L	T	Idl	FS	Sheb	Eism	.....	W	Warn	3	Spic	W	Timk	138	Math	34x3½	34x5	Jac	.....	94
Hahn G	3600	....	Cont	4	3½x5	19.6	3	¼	L	T	Idl	Fo	Strm	Mag	.....	D	Det	3	Spic	I	Torb	130	Del	34x3	34x4	Lay	.....	65
Hahn C	4200	....	Cont	4	4½x5¼	30	4	¼	L	C	Own	Fo	Strm	Bosch	.....	D	B-Li	3	Spic	W	Timk	136	Del	36x3½	36x5	Ross	Pier	65
Higrade A 18	2900	2100	Cont	4	3½x5	19.6	3	¼	L	T	Per	FS	Zen	Sim	L-N	F	Full	3	Bld	W	Shel	115	Per	35x5	35x5	Lav	Dup	66
Hoover 15-B	2425	1625	Cont	4	3½x5	19.6	3	¼	L	T	Can	Fo	Sheb	Dix	.....	F	Full	3	Acme	W	Shel	120	Shel	32x4	33x4½	Lav	.....	80
Indepen't F, Y'ngst'n, O.	2850	1685	Cont	4	3½x5	19.6	3	....	L	T	C	FS	Zen	Eism	.....	F	Full	3	Ster	W	Stan	128	S-El	34x3	34x4	Wohl	.....	70
Indepen't B, Dav'n't, Ia.	2900	1550	Cont	4	3½x5	19.6	3	¼	L	C	C	Fo	Strm	Bosch	.....	F	Full	3	Bld	I	Dead	132	GC	34x4½*	36x6*	Lav	.....	75
International F	3000	1850	Own	4	3½x5¼	19.6	3	¼	L	C	Own	FS	Holl	Bosch	Own	D	Own	3	Own	I	Own	128	.....	36x3½	36x4	Ross	Own	50
Jones 31 A	3400	1495	Cont	4	3½x5	19.6	3	¼	L	T	C	Fo	Strm	Eism	.....	B	Covt	3	Arv	I	Russ	130	Penn	34x3½	34x4	Warn	Pier	80
Menominee-HT	....	1890	Cont	4	3¾x5	22.5	3	¼	L	T	C	Sp	Strm	Eism	.....	F	Selec	3	Spic	W	Timk	130	Tut	34x3½	34x5	Ross	Mon	80
Myers 60	2850	1545	Lyco	4	3½x5	19.6	3	¼	L	T	C	FS	Zen	Swis	.....	D	MM	3	UM	W	Chic	130	C-C	34x3½	34x4	CAS	.....	75
Napoleon 9	3400	1385	Viet	4	3½x5	19.6	3	¼	O	T	C	Sp	Strm	Conn	Au-L	F	Full	3	UP	I	Cl	133	.....	32x3½	32x4	Lav	.....	65
Nash 2018	3400	1650	Own	4	3¾x5¼	22.5	4	¼	L	C	T	Fo	Strm	Eism	.....	B	Selec	3	Own	I	Celf	130	Stan	34x3	34x4	Jac	Simp	67.5
Nelson & Le Moon F1	2900	2000	Cont	4	3¾x5¼	22.5	3	¼	L	T	T	Sp	Strm	Bosch	W	L	B-Li	3	Own	W	Timk	...	Tut	36x3	36x4	Lav	Mon	80
Norwalk	1650	1595	Lyco	4	3½x5	28.5	3	¼	L	T	C	Sp	Zen	Delc	Dyn	D	MM	3	UM	W	½-Fl	130	C-C	34x4*	34x4	CAS	.....	90
Ogden A1	3400	2095	Cont	4	3¾x5	22.5	3	¼	L	T	T	FS	Rayf	Bosch	.....	B	B-Li	3	Acme	W	Timk	136	Tut	36x3	36x4	Gem	Pier	70
Old Hickory	3470	2175	Cont	4	4¾x5	22.5	3	¼	L	T	T	Fo	Strm	Mag	.....	B	Selec	3	Bld	W	½-Fl	135	S-El	36x3½	36x4	W	Pier	75
Oneida A	4320	2290	Cont	4	3¾x5¼	22.5	3	¼	L	C	L	FS	Strm	Bosch	Opt	M	Cott	3	Spic	W	Timk	144	Math	36x3½	36x5	Ross	Pier	82
Piedmont O	....	....	Lyco	4	3½x5	19.6	3	¼	L	T	Stan	Fo	Cart	Bat	Dyn	B	Selec	3	Hart	W	Emp	130	S-El	33x4*	33x4	.....	.....	.....
Rainier R-9	2800	1875	Cont	4	3½x5	19.6	3	¼	L	T	Har	FS	Zen	Sim	.....	L	B-Li	3	Hart	W	Shel	125	Per	32x3	32x4	Lav	Mon	80
Republic 10	2975	1595	Cont	4	3¾x5	22.5	3	¼	L	T	C	FS	Strm	Eism	.....	D	Full	3	Arv	I	Torb	124	S-El	34x3	34x4	Jac	Rug	.....
Royal	....	2400	Wis	4	3¼x5	16.9	.....	.....	.....	C	T	.....	Strm	Bosch	Opt	B	Own	3	Own	W	Timk	128	Mer	34x4	34x5	Ross	Mon	.....
Sandow G	3000	1795	Cont	4	3½x5	19.6	3	¼	L	T	T	FS	Strm	Eism	.....	D	Full	3	UM	W	Shel	120	GC	34x3½	34x5	Ross	.....	70
Service 220	3470	2100	Buda	4	3½x5½	19.6	3	¼	L	T	T	FS	Strm	Eism	.....	D	Selec	3	Arv	W	Timk	137	.....	34x3½	34x5	Ross	.....	64
Signal F	4395	2400	Cont	4	4½x5¼	27.2	3	¼	L	T	McC	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	144	Det	34x3½	36x5	Lav	Pier	80
Standard 56	3400	1900	Cont	4	3¾x5	22.5	3	¼	L	C	T	FS	Strm	Eism	.....	D	B-Li	3	Spic	W	Timk	134	.....	34x3½	34x4	Ross	Mon	75
Stewart 8	2820	1650	Cont	4	3½x5	19.6	3	¼	R	T	T	FS	Zen	Eism	.....	B	Durst	3	Hart	I	IG	130	Det	34x3½	34x4	Gem	.....	70
Superior D	....	1600	Cont	4	3½x5	19.6	3	¼	O	T	Idl	.....	Strm	Eism	.....	F	Full	3	Arv	I	Torb	124	Tut	34x4½*	34x4	Ross	Pier	.....
Transport 20	3070	1650	Cont	4	3¾x5	22.5	3	¼	L	T	C	FS	Strm	Eism	.....	F	Full	3	Ther	I	Cl	130	Det	34x3½	34x4	Jac	Simp	70
Vim 25	2800	2195	Her	4	3¾x5½	22.5	3	¼	L	C	McC	C	Zen	Dix	.....	D	Selec	3	Spic	W	Shel	120	Shel	35x5*	35x5*	Jac	.....	.....
Wilson F	3150	1750	Cont	4	3½x5	19.6	3	¼	L	T	H	FS	Strm	Eism	.....	D	Covt	3	Bld	W	Timk	124	Shel	35x5*	35x5*	Ross	Pier	75

1¼ Ton

Collier 16	2600	1375	Lyco	4	3½x5	19.6	3	¼	L	T	Jms	Sp	Zen	Conn	Au-L	B	GLee	3	Ther	B	Sals	128	Ster	33x4½	32x4½	Die	.....	50
Kissel-Delivery	2800	1875	Own	4	3⅞x5½	24.1	3	¼	L	C	McC	Sp	Strm	Eism	.....	W	Warn	4	Spic	B	Own	135	Math	34x4½*	34x½*	Jac	Pier	80
Koehler C	3000	1765	H.Sp	4	3½x5	19.6	3	¼	R	T	T	FS	Zen	Eism	.....	MM	MM	3	Spic	I	Torb	129	.....	34x3½	34x5	Own	Simp	65

1½ Ton

Acason RB	3850	....	Wau	4	3¾x5¼	22.5	3	¼	L	P	Can	Sp	Sheb	Eism	.....	F	Full	3	Bld	W	Timk	144	Det	36x3½	36x6	Ross	Wau	77
Acme F	....	2175	Cont	4	3¾x5	22.5	3	¼	L	T	GO	FS	Rayf	Eism	G&D	B	Cott	3	Bld	W	Timk	141	Det	34x3½	3415	Ross	Dup	80
Apex D	3070	1595	Buda	4	3½x5½	20	3	¼	L	C	Can	P	Strm	Au-L	Opt	F	Full	3	Det	I	Torb	130	Det	32x3½	32x4	Lav	.....	70
Atterbury 7R	4770	2575	Cont	4	4½x5¼	27.2	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	4	Spic	W	Timk	140	SP	36x3½	36x5	Gem	Mon	96.5
Beck-Hawkeye B	3200	1950	Cont	4	3¾x5	.....	.....	.....	.....	.....	H	Sp	Strm	Bosch	.....	F	Full	3	Bld	I	½-Fl	144	Hig	34x3½	34x5	Lav	Pier	75
Bessemer H 2	3650	2085	Cont	4	3¾x5	22.5	3	¼	L	T	C	FS	Zen	Bosch	.....	B	B-Li	3	Arv	I	Torb	144	Per	36x3½	36x5	Ross	.....	63
Bethlehem D	3300	1965	Own	4	3¾x4½	22.5	3	¼	L	T	Fed	FS	Sheb	Bat	G&D	B	Det	3	UP	I	Russ	136	Shel	34x3½	34x5	Lav	Mon	85
Brockway S	3800	2100	Cont	4	3¾x5	22.5	3	¼	L	T	Bus	FS	Sheb	Eism	.....	L	B-Li	3	Spic	W	Shel	140	Mer	36x3½	36x5	Gem	Opt	70
Clydesdale 42	....	....	Cont	4	3¾x5	22.5	3	¼	R	T	T	Sp	Zen	Bosch	.....	L	B-Li	3	Spic	W	Timk	146	Stan	36x3½	36x6	Ross	Own	.....
Comet 1½	2898	1750	Lyco	4	3½x5	19.6	4	¼	L	T	Stan	FS	Cart	Delc	Dyn	B	Munc	3	UP	W	Stan	130	Mar	34x4*	34x4	CAS	.....	85
Commerce EP	3200	1895	Cont	4	3¾x5	22.5	3	¼	L	T	L	Sp	Zen	Eism	Imp	C	Selec	3	Spic	I	Torb	134	Det	36x6*	36x6*	Jac	.....	80
Concord A	4200	2700	Buda	4	3¾x5½	22.5	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	3	Spic	W	Timk	140	Per	36x3½	36x5	Ross	Mon	70
Corbitt D	3960	2400	Cont	4	3¾x5	22.5	3	¼	L	T	McC	FS	Strm	Eism	.....	D	Full	3	Hart	W	Shel	130	Shel	34x3½	34x4	Ross	Simp	75
Day-Elder B	3300	2075	Cont	4	3¾x5	22.5	3	¼	L	T	Bus	FS	Zen	Berl	.....	D	Covt	3	Hart	W	Wis	144	Shel	34x3½	34x5	Ross	.....	72
Dearborn F	3280	1980	Cont	4	3½x5	19.6	3	¼	L	T	T	Sp	Strm	Bosch	.....	F	Full	3	Arv	W	Stan	126	Tut	34x4	34x5	Lav	.....	80
Defiance B	3200	1795	Cont	4	3¾x5	22.5	3	¼	R	T	Per	FS	Strm	Eism	.....	B	GLee	3	Arv	I	Torb	135	Det	34x3½	34x5	Dit	Mon	85
Diamond T-J4	3925	2755	.....	4	3¾x5	22.5	3	¼	L	T	T	FS	Strm	Bosch	.....	L	.....	3	Spic	W	.....	127	Math	36x3½	36x5	.....	Pier	.....
Douglas D	3100	2100	Buda	4	4½x5½	27.2	3	¼	L	C	Own	FS	Sheb	Eism	.....	F	Full	3	Arv	I	Torb	127	Own	34x3½	34x5	Ross	Pier	65
Erie 1½	....	....	Cont	4	4½x5¼	27.2	.....	¼	.....	C	.....	.....	Strm	Bosch	.....	D	.....	4	.....	W	Timk	144	.....	34x3½	36x5	.....	Pier	.....
Famous B-12	3600	2095	Cont	4	3¾x5	22.5	3	¼	L	T	T	Sp	Strm	Eism	.....	F	Full	3	Bear	I	Cl	138	Det	36x3½	36x5	Ross	Mon	75
Federal T	4250	2350	Cont	4	4½x5¼	27.2	3	¼	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	144	Math	36x3½	36x5	Gem	Mon	76
Forschler A-X	3670	2375	Cont	4	3½x5	19.6	3	¼	L	C	Own	FS	Zen	Bosch	Opt	F	Full	3	Hart	W	Shel	120	Own	34x3½	34x4	Ross	Dup	.....
Fulton C	3340	2350	H-Sp	4	3¼x5	18.2	3	¼	L	C	T	GO	FS	Cart	Sim	.....	B	Dur	3	UM	I	Russ	137	S-El	34x4	34x6	Lav	.....	68
Gary GT	4200	2025	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Strm	Eism	.....	D	Selec	3	.....	.....	Timk	144	S-El	34x3½	34x6	Ross	.....	.....
Gersix M	4300	2650	Buda	4	4 x5½	25.6	3	¼	L	C	I	Fo	Strm	Bosch	.....	B	Cott	3	Bld	W	Own	142	Tut	36x3½	36x6	Ross	Mon	70
Giant 14	3600	2250	Cont	4	3½x5	19.6	3	¼	L	C	C	FS	Sheb	Eism	.....	W	Warn	3	Spic	W	Timk	138	Math	34x3½	34x5	Jac	Pier	94
G. M. C. 31 A	4205	2395	Cont	4	3¾x5	22.5	3	¼	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	130	Det	36x3½	36x5	Jac	Mon	74
G. M. C. 31 B	4245	2395	Cont	4	3¾x5	22.5	3	¼	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	144	Det	36x3½	36x5	Jac	Mon	74
Gramm-Bernstein 15	3700	1895	Cont	4	3¾x5	22.5	3	¼	R	T	T	Sp	Strm	NE	.....	D	Selec	3	Own	I	Cl	138	.....	36x3½	36x5	Ross	.....	.....
Grant 10	3000	1885	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Spld	Remy	B	GLee	3	Arv	I	Torb	124	Per	34x4½*	34x5	Jac	Pier	65
Grant 11	3100	1935	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Spld	Remy	B	GLee	3	Arv	I	Torb	140	Per	34x4½*	34x5	Jac	Pier	67
Hahn D	4600	....	Cont	4	4½x5	30	4	¼	L	C	Own	Fo	Strm	Bosch	.....	D	B-Li	3	Spic	W	Timk	142	Del	36x3½	36x6	Ross	Pier	65
Harvey W E A	3850	2350	Buda	4	4½x5½	27.2	4	¼	L	P	T	Fo	Zen	Bosch	.....	F	Full	3	Arv	W	Shel	128	Shel	34x3½	34x5	Ross	Mon	60
Hawkeye K	3400	1995	Buda	4	3¾x5½	22.5	3	¼	L	C	C	FS	Zen	Eism	.....	F	Full	3	Hart	I	Cl	148	Det	34x3½	34x5	Ross	Simp	70
Huffman B	3200	1695	Cont	4	3¾x5	22.5	3	¼	....	T	C	Fo	Zen	Dix	Imp	F	Full	3	.....	H	Stan	140	Per	34x3½	34x5	Lav	.....	85
Huffman C	3350	1495	Cont	4	3¾x5	22.5	3	¼	....	T	C	Fo	Zen	Dix	Imp	F	Full	3	.....	H	Torb	140	Per	34x3½	34x5	Lav	.....	85
Hurlburt	4300	2850	Buda	4	4 x5½	25.6	3	....	L	C	C	S	Flch	Eism	.....	D	B-Li	3	Spic	W	Flot	148	Per	34x4	34x5	Ross	Dup	.....
Indepen't E, Dav'n't, Ia.	1890	3550	Cont	4	3¾x5	22.4	3	¼	L	C	C	Sp	Strm	Bosch	.....	F	Full	3	Bld	I	Dead	135	GC	35x5*	38x7*	Lav	.....	75
Indiana Q	4200	2600	Rut	4	4½x5½	27.2	3	¼	L	C	T	Fo	Strm	Eism	.....	B	Selec	4	Acme	W	½-Fl	144	S-El	36x3½	36x5	Wohl	Pier	68½
International K	3400	2200	Own	4	3½x5¼	19.6	3	¼	L	C	Own	FS	Holl	Bosch	Own	D	Own	3	Own	I	Own	128	.....	36x3½	36x5	Ross	Own	50

UNIVERSITY OF

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
1½ Ton—Continued																												
Kalamazoo G	....	2500	Cont	4	3¼ x5	22.5	3	¼	L	T	Hvn	FS	Strm	Conn	Dyn..	F	Full	4	Acme	W	Wis	144	Kal	34x4	34x5	Ross	Pier	.....
Kelly-Springfield K 31	4590	3000	Own	4	3¾ x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	West	C	Covt	3	Own	C	Dead	144	Per	36x3½	36x6	Gem	Own	89
Kelly-Springfield K 32	4685	3000	Own	4	3¾ x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	West	C	Covt	3	Spic	W	½-Fl	144	Per	36x3½	36x6	Gem	Own	89
Kimball A	....	....	Wis	4	4 x6	25.6	3	¼	L	C	Flex	FS	Mas	Bosch	.....	L	Selec	4	Spic	W	Shel	126	US	36x3½	36x5	Lav	Dup	80
Kissel-Utility	3600	2275	Own	4	3½ x5½	24.1	3	¼	L	C	McC	Sp	Strm	Eism	.....	W	Warn	3	Spic	W	Shel	152	Math	36x3½	36x5	Jac	Pier	80
Larabee-Deyo U	3600	2150	Cont	4	3¾ x5	22.5	3	¼	L	C	Bus	Sp	Sheb	Bosch	.....	L	B-Li	3	M	W	Shel	138	Mer	34x3½	34x5	Ross	Pier	.....
Maccar L	4450	2750	Cont	4	4⅛x5¼	27.2	3	¼	L	C	Own	FS	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	150	Mer	36x4	36x5	Ross	Pier	70
Mack AB	4800	2800	Own	4	4 x5	25.6	3	....	L	C	H	FS	Strm	Dix	.....	D	Selec	4	.....	C	Dead	Op	.....	36x3½†	.....	Own	.....	46
Manly 30	....	2050	Wau	4	3¾ x5¼	22.5	3	¼	L	C	T	Sp	Zen	Eism	.....	F	Selec	3	Ther	W	½-Fl	144	Shel	36x4	36x6	Lav	Wau	.....
Master Junior JW	3800	2290	Buda	4	4⅛x5½	27.2	3	¼	L	C	T	Sp	Mas	Eism	.....	D	Full	3	Arv	W	Timk	142	Det	34x3½	34x5	Ross	McC	78
Master Junior JI	3900	2190	Buda	4	4⅛x5½	27.2	3	¼	L	C	T	Sp	Mas	Eism	.....	D	Full	3	Arv	IG	Torb	142	Det	34x3½	34x5	Ross	McC	78
Maxwell	2385	1185	Own	4	3⅝x4½	21.3	3	¼	L	C	T	FS	John	At-K	.....	C	Selec	3	Own	W	½-Fl	124	Shel	32x3	32x4	Own	.....	50
Menominee H	....	2475	Cont	4	3¾ x5¼	22.5	3	¼	L	C	C	Sp	Strm	Eism	.....	F	Selec	3	Spic	W	Timk	144	Tut	36x3½	36x5	Ross	Mon	80
Moreland 19B	4150	2930	Cont	4	4⅛x5¼	27.2	3	¼	L	C	C	Fo	Mill	Dix	.....	D	Selec	4	Ther	W	Timk	126	US	36x3½	36x5	Ross	.....	.....
Myers 80	3000	1875	Lyco	4	3½x5	19.6	3	¼	L	C	T	Sp	Zen	Swis	.....	B	GLee	3	UM	W	Chic	144	C-C	34x3½	34x5	CAS	.....	75
Napoleon 11	3450	1660	Vict	4	3½x5	19.6	3	¼	L	O	T	Sp	Strm	Conn	Au-L	F	Full	3	UP	I	IG	133	S-El	34x4	34x5	Lav	.....	65
Nelson & Le Moon F1½	3400	2425	Cont	4	3¾ x5¼	22.5	3	¼	L	C	T	Sp	Strm	Bosch	West	L	B-Li	3	Own	W	Timk	...	Tut	36x3½	36x5	Lav	Mon	80
Noble NW1	3950	2450	Cont	4	3¾ x5	22.5	3	¼	L	R	T	FS	Strm	Eism	G&D	F	Full	3	Acme	W	Shel	144	Kal	36x3½	36x5	Ross	.....	80
Norwalk	1850	1925	Lyco	4	3½x5	19.6	3	¼	L	C	T	FS	Zen	Delc	.....	B	GLee	3	UM	W	Stan	130	C-C	34x3½	34x5	CAS	.....	75
O. K. 1½ T	3850	2450	Rut	4	4⅛x5½	27.2	3	¼	L	C	T	FS	Cart	Dix	.....	D	Selec	3	Hart	W	Stan	146	Tut	36x4	36x5	Ross	Pier	85
Old Reliable A	4150	2350	Wis	4	4 x5	27.2	3	¼	L	C	C	FS	Strm	Bosch	Opt	M	B-Li	3	Spic	W	Shel	138	Shel	34x3½	36x6	Ross	Pier	82
Oneida B	5280	2650	Cont	4	4⅛x5¼	27.2	3	¼	L	L	L	Fo	Stan	Bosch	Opt	M	Cott	3	Spic	W	Timk	144	Math	36x3½	36x6	Ross	Pier	.....
Packard 1½ E	4640	3200	Own	4	4 x5½	25.6	3	¼	L	C	T	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	144	.....	34x3½	34x3½†	Own	Own	45.9
Patriot Lincoln	3400	2150	Cont	4	3¾ x5	22.5	3	¼	L	L	Own	FS	Strm	Bosch	.....	D	Selec	3	Ther	H	1G	135	S-El	34x3½	34x5	W	Pier	75
Piedmont	....	....	Lyco	4	3½x5	19.6	3	¼	L	T	Stan	Fo	Cart	Bat	Dyn	B	Selec	3	Hart	W	Emp	140	S-El	.....	.....	.....	.....	.....
Rainier R-6	3100	1975	Cont	4	3½x5	19.6	3	¼	L	T	Har	FS	Zen	Sim	.....	L	B-Li	3	Hart	W	Shel	133	Per	34x3	34x4	Lav	Mon	80
Reliance	4500	2500	Buda	4	4⅛x5½	27.2	3	¼	L	C	H	FS	Strm	Bosch	.....	F	Full	3	Acme	E	Dead	150	Shel	36x3½	36x5	Ross	Pier	90
Republic 11X	3365	1885	Cont	4	3¾ x5	22.5	3	¼	L	C	C	FS	Strm	Eism	.....	D	Full	3	Arv	I	Torb	144	S-El	34x3½	34x5	Jac	Rug	.....
Royal	....	2800	Wis	4	3¾ x5	22.5	.....	.....	.....	C	T	.....	Strm	Bosch	Opt	D	Own	...	Own	W	Timk	128	Mer	34x4	34x5	Ross	.....	67
Sandow CG	3300	2090	Cont	4	3½x5	19.6	3	¼	L	T	T	FS	Strm	Eism	.....	D	Full	3	UM	W	Shel	135	GC	34x3½	34x5	Ross	.....	70
Schwartz	3500	2175	Cont	4	3¾ x5	22.5	3	¼	L	T	Fed	FS	Strm	Bosch	.....	L	B-Li	3	Hart	I	Torb	140	.....	34x3½	34x5	Ross	Pier	.....
Selden 1½A	3400	2185	Cont	4	3¾ x5	22.5	3	¼	L	T	Bus	FS	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	140	Per	34x3½	34x5	Lav	Pier	70
Service 31	4500	2500	Buda	4	4x5½	25.6	3	¼	L	L	T	Fo	Strm	Eism	.....	D	Selec	4	Spic	W	Timk	150	.....	36x3½	36x6	Ross	Simp	65
Service 36	4500	2930	Buda	4	4¼x5½	28.9	3	¼	L	L	C	Fo	Strm	Eism	.....	D	Selec	4	Spic	W	Timk	150	.....	36x6*	38x7*	Ross	Simp	67
Signal H	4675	2700	Cont	4	4⅛x5¼	27.2	3	¼	L	C	McC	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	144	Det	34x4	36x6	Lav	Pier	80
Stewart 9	3440	1975	Cont	4	3¾ x5	22.5	3	¼	L	R	T	FS	Zen	Eism	.....	F	Full	3	Hart	I	IG	140	Det	34x3½	34x4†	Gem	.....	70
Stoughton B	....	....	.....	4	3¾ x5¼	....	....	....	....	C	Own	C	Strm	Eism	.....	D	B-Li	3	.....	.....	Shel	140	S-El	36x3½	36x5	.....	.....	.....
Sullivan F	3500	2350	Buda	4	3¾ x4½	22.5	3	¼	L	C	T	Fo	Strm	Bosch	.....	H	Covt	3	Hart	W	Timk	129	Mer	36x3½	36x5	Ross	.....	60
Texan TK	3200	1425	Lyco	4	3½x5	19.6	3	¼	L	L	H	FS	Cart	Delc	Dyn	B	Munc	3	UP	W	½-Fl	130	S-El	34x4	34x4	CAS	.....	60
Tiffin GW	3750	2300	Cont	4	4⅛x5¼	27.2	3	¼	L	L	V	FS	Sheb	Bosch	.....	F	Full	3	Hart	W	Timk	129	Mer	36x3½	36x5	Ross	Dup	.....
Transport 30	3450	1950	Cont	4	3¾ x5	22.5	3	¼	L	L	C	FS	Strm	Eism	.....	F	Full	3	Hart	I	Cl	140	Det	36x3½	36x5	Jac	Simp	70
Triangle A	3750	2185	Wau	4	3¾ x5¼	22.5	3	....	L	C	Per	Sp	Strm	Eism	.....	F	Full	3	UP	I	Cl	144	Det	34x3½	34x6	Gem	Wau	60
Triumph 1½	....	1950	Buda	4	3¾ x5⅛	....	....	....	....	C	H	Sp	Strm	Dix	.....	....	Selec	3	.....	.....	Russ	140	.....	36x3½	36x5	Lav	.....	.....
United A	....	2095	Buda	4	4¾ x5½	22.5	4	....	L	C	V	Fo	.....	Eism	Opt	L	B-Li	...	Bld	I	Cl	Op	.....	36x3½	36x6	Ross	Simp	80
U. S. N.	3800	1995	Cont	4	3¾ x5	22.5	3	¼	L	R	T	Sp	Strm	Eism	Opt	D	B-Li	3	Opt	I	Cel	144	Shel	36x3½	36x5	Lav	Mon	80
Velie 46	3650	1925	Cont	4	3¾ x5	22.5	3	¼	L	L	T	FS	Strm	Bosch	.....	B	Durst	3	Arv	I	Torb	133	Math	36x3½	36x5	Ross	Mon	80
White Hickory II	3975	2475	Cont	4	3¾ x5	22.5	3	¼	L	L	C	FS	Strm	Eism	.....	F	Full	3	Arv	W	Timk	144	Shel	36x3½	36x5	Ross	Pier	76
Wichita L	3600	2350	Own	4	3½x5	19.6	3	¼	L	L	T	Sp	Strm	.....	.....	C	Covt	3	Own	W	Shel	144	.....	36x3½	36x5	Ross	.....	.....
Winther 39	3700	2150	Wis	4	3¾ x5	22.5	3	¼	L	P	L	G	Strm	Eism	Bij	F	Full	3	Arv	I	Cl	140	Har	34x3½	34x5	Lav	.....	70
Winther 430	4100	2375	Wis	4	3¾ x5	22.5	3	¼	L	P	L	G	Strm	Eism	.....	F	Full	3	Arv	I	Cl	132	Har	32x4	32x4	Lav	.....	70
Witt Will W DT 19	3550	2000	Cont	4	3¾ x5¼	22.5	3	¼	L	L	T	FS	Zen	Eism	.....	D	Selec	3	Spic	W	Timk	120	S-El	36x3	36x4	Ross	Pier	67
Wolverine C	3400	2250	Cont	4	3¾ x5	22.5	....	....	L	G	L	FS	Strm	Opt	G&D	F	Selec	3	UP	I	Russ	140	Tut	34x3½	34x5	Gem	Mon	77
2 Ton																												
Acason H	4354	....	Wau	4	4¼ x5¾	28.9	3	¼	L	GD	Can	Sp	Sheb	Eism	.....	B	Cott	4	Bld	W	Timk	150	Det	36x4	36x7	Ross	Wau	76
Ace	4000	....	Buda	4	3¾ x5½	22.5	3	....	L	C	Spir	Fo	Sheb	At-K	West	L	B-Li	4	Spic	W	Timk	144	Math	34x3½	34x5	Ross	Pier	.....
Acme A	4450	2750	Cont	4	4⅛x5¼	27.2	3	¼	L	C	GO	FS	Rayf	Eism	.....	L	Cott	3	Bld	W	Timk	148	Det	36x4	36x7	Ross	Dup	80
Armleder HW	4550	....	Cont	4	4⅛x5¼	27.2	3	¼	L	C	T	Fo	Zen	Bosch	.....	D	B-Li	3	Opt	W	Timk	Op	Math	36x4	36x7	Ross	Mon	80
Atterbury 7C XLWB	5325	3275	Cont	4	4⅛x5¼	27.2	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	4	Spic	W	Timk	171	SP	36x4	36x4†	Gem	Mon	92.5
Atterbury 7C XSTD	5260	3175	Cont	4	4½x5¼	27.2	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	4	Spic	W	Timk	153	SP	36x4	36x7	Gem	Mon	92.5
Autocar F	3430	2300	Own	2	4¾ x4½	18	4	¼	L	C	V	Sp	Strm	Mag	.....	D	Prog	3	.....	DR	Flot	97	.....	34x4	34x5	Own	.....	.....
Autocar G	3690	2400	Own	2	4¾ x4½	18	4	¼	L	C	V	Sp	Strm	Mag	.....	D	Prog	3	.....	DR	Flot	120	.....	34x4	34x5	Own	.....	.....
Available H-2	4500	....	Cont	4	4½x5¼	27.2	3	¼	L	C	T	Sp	Strm	Bosch	.....	B	B-Li	4	Spic	W	Timk	148	Tut	36x4	36x7	Lav	Pier	70
Beck-Hawkeye C	4000	2350	Cont	4	4⅛x5¼	....	....	....	....	C	H	Fo	Strm	Bosch	.....	F	Full	3	Bld	I	½-Fl	144	Hig	36x3½	36x6	Lav	Pier	70
Brockway K-3	4700	2950	Cont	4	4⅛x5¼	27.2	3	¼	L	L	Bus	FS	Sheb	Eism	.....	H	B-Li	3	Spic	W	Timk	Op	Mer	36x4	36x7	Gem	Mon	80
Clydesdale 65	4850	....	Cont	4	4⅛x5¼	27.2	3	¼	L	C	T	Sp	Zen	Bosch	.....	L	B-Li	4	Spic	W	Timk	163	Stan	36x4	36x4†	Ross	Own	73
Columbia E	4100	2350	Cont	4	4⅛x5¼	27.2	3	¼	L	C	T	FS	Shk	Dix	.....	C	Covt	3	Spic	I	Russ	144	Per	36x4	36x6	Own	Pier	80
Conestoga 30	4000	2700	Cont	4	3¾ x5	22.5	3	¼	L	L	EM	Sp	Strm	Simms	.....	F	Full	3	Ster	W	Wis	138	S-El	36x4	36x4†	Ross	.....	80
Corbitt C	4800	3000	Cont	4	4⅛x5¼	27.2	3	¼	L	L	T	Sp	Strm	Eism	.....	F	Full	3	Hart	W	Shel	148	Shel	36x3½	36x7	Ross	Simp	75
Dart CC4	4785	2950	Buda	4	4¼x5½	28.9	3	¼	L	C	C	Fo	Zen	Eism	.....	F	Full	4	Spic	W	Timk	150	Per	36x4	36x7	Ross	Simp	80
Day-Elder D	3650	2450	Cont	4	4¼x5¼	27.2	3	¼	L	L	P	FS	Zen	Berl	.....	D	Covt	3	Hart	W	Wis	144	Shel	36x4	36x6	Ross	Mon	72

Dearborn BW	3000	1750	Buda	4	3½x5½	28.9	3	....	L	T	H	Sp	Strm	Bosch	.....	B	G-Lee	3	Arv	Ch	C-C	133	C-C	32x4*	34x5	Dit	.....	90						
Defiance C	3500	1995	Cont	4	3¾x5	22.5	3	☆	R	T	Per	FS	Strm	Eism	.....	B	G-Lee	3	Arv	I	Torb	135	Det	34x3½	34x6	Dit	Mon	85						
DeKalb E2	4150	2100	Cont	4	4½x5¼	27.2	3	☆	L	T	T	Fo	Mas	Eism	.....	F	Full	3	K-B	W	Timk	146	Math	34x3½	36x5	Ross	.....	68						
Denby 134	3800	2450	Cont	4	3¾x5	22.5	3	☆	R	T	L	Sp	Strm	Eism	.....	F	Full	4	UP	I	Russ	144	Det	36x3½	36x6	Gem	Mon	75½						
Diamond T-J3	4335	3185	.....	4	4½x5¼	27.2	3	☆	L	T	T	FS	Strm	Bosch	.....	L	.....	4	Spic	W	.....	154	Math	36x4	36x7	.....	Pier	.....						
Diamond T-FS-T	4000	2200	.....	4	3¾x5¼	22.5	3	☆	L	C	T	FS	Strm	Bosch	.....	L	.....	3	.....	W	.....	144	Math	36x3½	36x5	.....	Pier	.....						
Dorris K4	5200	2985	Own	4	4¼x5½	28.9	3	¼	I	I	T	Fo	Strm	Bosch	West	D	Warn	4	Spic	W	Timk	162	Row	36x4	36x7	Ross	Own	70						
Erie 2	....	....	Cont	4	4½x5¼	27.2	....	☆	....	C	....	....	Strm	Bosch	.....	D	.....	4	.....	W	Timk	144	.....	34x3½	36x5	.....	Pier	.....						
Fageol 3400	4600	....	Wau	4	4¼x5¾	28.9	3	¼	L	C	Spi	Sp	Zen	Dix	.....	B	Selec	5	Spic	W	Timk	144	Math	34x4	36x7	Ross	Wau	80						
Fargo P	3900	2200	Cont	4	3¾x5	22.5	3	☆	L	C	Own	Sp	Rayf	Bosch	.....	D	Full	4	Spic	I	Russ	144	Shel	36x4	36x6	Jac	.....	80						
Federal U	4800	2600	Cont	4	4½x5¼	27.2	3	☆	L	C	Spl	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	156	Math	36x4	36x7	Gem	Mon	77						
Forschler B	4425	2750	Cont	4	4½x5¼	27.2	3	☆	L	C	Own	FS	Zen	Bosch	Opt	F	Full	3	Hart	W	Shel	137	Own	34x4	34x7	Ross	Dup	.....						
Gabriel E	5000	3250	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Rayf	Bosch	L-N	B	B-Li	4	Spic	W	Timk	156	Mer	35x5	36x7	Gem	Dup	65						
Garford 70B	4350	2990	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Sp	Rayf	Spld	.....	L	Selec	4	Spic	W	Timk	144	Per	36x4	36x7	Ross	Simp	.....						
Gary	4500	2550	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Strm	Eism	.....	D	Full	3	.....	.....	Timk	144	S-El	36x4	36x6	Ross	.....	.....						
Giant 16	4500	2850	Cont	4	4½x5¼	27.2	3	☆	L	C	C	FS	Sheb	Eism	.....	W	Warn	3	Spic	W	Timk	144	Math	36x4	36x7	Jac	.....	90						
G. M. C. 41A	4855	2725	Cont	4	4½x5¼	27.2	3	☆	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	144	Det	36x4	36x7	Jac	Mon	74						
G. M. C. 41B	4910	2725	Cont	4	4½x5½	27.2	3	☆	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	158	Det	36x4	36x7	Jac	Mon	74						
Gramm-Bernstein 20	5000	2700	Cont	4	4½x5¼	27.2	3	☆	R	C	T	Sp	Strm	NE	.....	D	Own	3	Own	W	Shel	144	.....	36x4	36x7	Ross	Pier	72.2						
Grant 15	3400	2150	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Spld	Remy	B	GLee	3	Arv	I	Torb	124	Per	34x4	34x6	Jac	Pier	67						
Grant 16	3500	2250	Cont	4	3¾x5	22.5	3	¼	L	T	Fed	FS	Cart	Spld	Remy	B	GLee	3	Arv	I	Torb	140	Per	34x4	34x6	Jac	Pier	70						
Hahn H	4800	....	Cont	4	4½x5¼	30	3	☆	L	P	Own	Fo	Strm	Mag	.....	D	B-Li	3	Spic	W	Timk	Op	Del	36x4	36x7	Ross	Pier	.....						
Hahn E	5000	....	Cont	4	4½x5½	40	4	¼	L	P	Own	Fo	Strm	Bosch	.....	D	B-Li	3	Spic	W	Timk	Op	Det	36x4	36x4†	Gem	Dup	.....						
Hall	4560	2875	Cont	4	4½x5¼	27.2	....	☆	L	C	H	FS	Zen	Bosch	.....	L	B-Li	...	K-B	W	Timk	Op	Det	36x4	36x6	Ross	Simp	70						
Hawkeye M	4000	2650	Buda	4	4¼x5½	28.9	3	☆	L	C	C	FS	Zen	Eism	.....	F	Full	4	Hart	I	Cl	148	Det	36x4	36x6	Ross	Simp	70						
Hendrickson I	....	3000	Buda	4	4¼x5¾	28.9	3	¼	L	C	T	Fo	Strm	Dix	.....	D	Full	4	Ther	W	Timk	Op	Tut	36x4	36x7	Ross	Pier	80						
Hewitt-Ludlow	4200	2950	Buda	4	4½x5½	27.2	....	☆	....	C	T	....	Strm	Bosch	.....	B	Cott	....	Spic	.....	Wis	140	.....	36x4	36x6	Ross	.....	.....						
Hurlburt	5600	3750	Buda	4	4¼x5½	28.9	3	☆	L	C	T	FS	Flch	Eism	.....	D	B-Li	3	Spic	W	Flot	148	Per	36x4	36x4†	Ross	Dup	.....						
Indepen't F, Dav'n't, Ia.	4500	2290	Cont	4	4½x5¼	27.2	3	☆	L	C	C	Fo	Strm	Bosch	.....	F	Full	4	Bld	I	Dead	146	G-C	36x6*	40x8*	Lav	.....	75						
Indepen't G, Y'ngst'n, O.	3800	2300	Cont	4	4½x5¼	27.2	3	☆	L	C	C	FS	Zen	Eism	.....	F	Full	3	.....	W	Wis	144	S-El	34x3	34x6	Wohl	.....	70						
Indiana D	5000	2800	Rut	4	4½x5¼	27.2	3	¼	L	C	T	Fo	Strm	Eism	.....	B	Selec	4	Acme	W	½-Fl	150	S-El	36x4	36x7	Wohl	Pier	71½						
International G	4010	2600	Own	4	4 x5	25.6	4	¼	O	C	Own	FS	Ens	Dix	Own	D	Own	3	Own	I	Own	138	.....	36x4	36x6	Ross	Own	50						
Jumbo C	4450	2900	Buda	4	4¼x5½	28.9	3	¼	L	C	GO	Fo	Zen	Eism	.....	F	Full	3	Arv	I	Cl	108	Det	36x4	36x7	Jac	Dup	60						
Jumbo E	4500	2775	Buda	4	4¼x5½	28.9	3	¼	L	C	GO	Fo	Zen	Eism	.....	F	Full	3	Arv	I	Cl	168	Det	36x4	36x7	Jac	Dup	60						
Kalamazoo H	....	3150	Cont	6	3½x5¼	29.4	3	¼	L	P	Hvn	FS	Strm	Bosch	Dyn	B	Full	4	Acme	W	Wis	160	.....	34x4	36x7	Ross	Pier	.....						
Keldon 19	5100	2685	Buda	4	4¼x5½	28.9	4	¼	L	C	Eur	Fo	Strm	Eism	.....	F	Full	4	Det	I	Russ	144	.....	36x4	36x7	Ross	Pier	80						
King-Zeitler	4600	2950	Cont	4	4½x5¼	27.2	3	☆	L	C	T	FS	Strm	Bosch	.....	L	B-Li	4	Ther	W	Timk	150	Tut	36x4	36x7	Lav	.....	80						
Kissel-Freighter	4700	2975	Own	4	4¼x5½	28.9	3	☆	L	C	McC	Sp	Strm	Eism	.....	W	Warn	4	Spic	W	Timk	168	Math	36x4	36x7	Lav	Pier	80						
Lange B	5200	2900	Cont	4	4½x5¼	27.2	3	☆	L	C	H	Sp	Strm	Bosch	.....	D	Cott	3	Hvn	C	Own	136	.....	36x4	36x6	Gem	Pier	90						
Luverne BBL	....	1650	GBS	4	3¾x4¼	....	3	☆	L	C	H	Sp	Sheb	Bosch	Dyn	D	Det	3	UP	I	Flot	136	Har	34x4*	34x5	Lav	.....	.....						
Mack AB	4900	3000	Own	4	4 x5	25.6	3	☆	L	C	H	FS	Strm	Dix	.....	D	Selec	4	.....	W	Dead	Op	.....	36x6	34x4†	.....	Own	47						
Manly 40	....	2350	Wau	4	3¾x5¼	22.5	3	¼	L	C	T	Sp	Zen	Eism	.....	D	Selec	3	Ther	W	½-Fl	144	Shel	36x4	36x7	Lav	Wau	.....						
Master M	4300	2590	Buda	4	4¼x5½	28.9	3	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Arv	I	Torb	144	Det	34x4	36x7	Ross	McC	76						
Master O	4400	2690	Buda	4	4¼x5½	28.9	3	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Arv	I	Torb	170	Det	34x4	36x7	Ross	McC	76						
Master T	4500	2850	Buda	4	4¼x5½	28.9	3	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Arv	W	Torb	110	Det	34x4	36x4*	.....	.....	76						
Master W	4500	2890	Buda	4	4¼x5½	28.9	3	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Arv	W	Timk	144	Det	34x4	36x7	Ross	McC	76						
Master WL	4600	2990	Buda	4	4¼x5½	28.9	3	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Arv	W	Timk	170	Tut	34x4	36x7	Ross	McC	80						
Menominee D	....	2950	Cont	4	4½x5¼	27.2	3	☆	L	C	T	FS	Strm	Eism	.....	F	Full	4	Spic	W	Timk	144	Tut	36x4	36x4†	Ross	Mon	80						
Muskegon 20	4015	2325	Cont	4	4½x5¼	27.2	3	☆	L	C	May	FS	Stew	Eism	.....	F	Full	3	Hart	I	Torb	144	Per	36x4	36x6	Lav	Pier	75						
Nash 3018	3850	2250	Own	4	3¾x5¼	22.5	4	¼	L	C	T	Fo	Strm	Eism	.....	B	Selec	4	Own	I	Celf	144	Math	34x4	34x6	Lav	Simp	73.5						
Nash Quad 4017	6250	3250	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Strm	Eism	.....	B	I-Cl	4	Spic	F	Own	124	Math	36x5	36x5	Lav	Mon	55						
Nelson & Le Moon F2	4100	2775	Cont	4	4½x5¼	27.2	3	☆	L	C	T	Sp	Strm	Bosch	W	L	B-Li	3	Own	W	Timk	Op	Tut	36x4	36x7	Lav	Mon	80						
Netco D	5900	3000	Cont	4	4½x5¼	27.2	3	☆	L	C	RT	Sp	Zen	Eism	.....	L	B-Li	3	Hart	W	Timk	144	Per	36x4	36x7	Ross	.....	80						
Northway B2	....	....	.....	4	4 x6	.....	.....	.....	.....	.....	.....	.....	.....	Mag	.....	D	.....	.....	.....	.....	.....	146	S-El	36x6*	38x7*	Ross	.....	.....						
Northwestern W2	4900	2950	Cont	4	4½x5¼	27.2	3	☆	L	C	MR	Sp	Strm	Bosch	.....	H	Selec	3	Bld	W	Shel	164	Shel	34x4	36x7	Ross	.....	80						
Ogden B1	4300	2695	Cont	4	4½x5¼	27.2	3	☆	L	C	T	FS	Rayf	Bosch	.....	B	B-Li	4	Acme	W	Timk	160	Tut	36x4	36x7	Gem	Pier	70						
O. K. 2T	4000	2850	Buda	4	4½x5½	27.2	3	☆	L	C	T	FS	Zen	Eism	.....	D	Selec	3	Hart	W	Wis	150	Tut	36x4	36x7	Ross	Pier	85						
Oneida C	5440	3000	Cont	4	4½x5¼	27.2	3	☆	L	C	T	FS	Strm	Bosch	Opt	M	Cott	3	Spic	W	Timk	144	Math	36x4	36x7	Ross	Pier	82½						
Oshkosh 4	4200	3500	H-Sp	4	3¾x5	16.9	3	☆	L	C	L	FS	Zen	Bat	.....	L	B-Li	4	Peters	B	Flot	130	.....	34x4*	34x4*	Own	Dup	60						
Packard 2-E	5100	3600	Own	4	4 x5½	25.6	3	¼	L	C	T	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	144	.....	34x4	34x4†	Own	Own	48						
Parker F9C	4500	3325	Cont	6	3½x5¼	29.4	3	¼	L	C	T	Own	Fo	Strm	Bosch	West	L	Full	4	Arv	W	Own	150	S-El	34x4	36x4†	Ross	Mon	75						
Parker F9W	4500	3325	Wis	4	4 x6	25.6	3	¼	L	C	T	Own	Fo	Strm	Bosch	West	L	Full	4	Arv	W	Own	150	S-El	34x4	36x4†	Ross	Mon	80						
Pierce-Arrow X4	6250	4300	Own	4	4 x5½	25.6	4	¼	T	P	T	Fo	Own	Eism	.....	C	Selec	4	Own	W	Flot	144	S-El	36x4	36x4†	Ross	Mon	70						
Rainier R-8	3600	2400	Cont	4	3¾x5	....	3	☆	L	C	Har	FS	Zen	Sim	.....	L	B-Li	3	Hart	I	Shel	147	Per	34x5	34x6	Ross	Mon	80						
Republic 19	4150	2395	Cont	4	4½x5¼	27.2	3	☆	L	C	C	FS	Strm	Eism	.....	D	Full	4	Arv	I	Torb	144	S-El	36x4	36x7	Jac	Pharo	.....						
Rowe CDW	4500	3000	Wis	4	4 x5	32	4	¼	L	C	May	Fo	Zen	Bosch	.....	L	B-Li	4	Arv	W	Timk	142	Shel	34x4	36x4†	Ross	Simp	53						
Royal	....	3200	Wis	4	4 x6	25.6	....	☆	....	C	T	....	Strm	Bosch	Opt	B	Own	...	Own	W	Timk	...	Mer	36x4½	36x6	Ross	Mon	.....						
Sandow I	3800	2375	Cont	4	3¾x5	22.5	3	☆	L	C	P	T	FS	Strm	Eism	.....	D	Full	3	K-B	I	Torb	150	GC	36x4	36x6	Ross	.....	70						
Schacht	5500	3350	Buda	4	4¼x5½	28.9	3	¼	R	P	Own	Fo	Sheb	Bosch	.....	H	Own	3	Flex	W	Own	144	Nat	36x3½	36x7	Own	Dup	70						
Schwartz	4000	2675	Cont	4	4½x5¼	27.2	3	☆	L	C	Fed	FS	Strm	Bosch	.....	L	B-Li	3	Hart	I	Torb	146	.....	36x4	36x7	Ross	Pier	.....						
Selden JWBL	5050	3050	Cont	4	4½x5¼	27.2	3	☆	L	C	Bus	FS	Strm	Bosch	.....	L	B-Li	4	Spic	W	Timk	162	Per	36x4	36x7	Jac	Pier	70						
Shaw M-3	....	2750	Cont	4	4½x5¼	27.2	3	☆	L	C	T	FS	Zen	Bosch	.....	D	B-Li	3	Spic	W	Timk	153	Per	36x4	36x6	Gem	Mon	75						
Signal J	5010	3100	Cont	4	4½x5¼	27.2	3	☆	L	C	C	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	150	Det	34x4	36x8	Lav	Pier	80						
Standard 76	4430	2800	Cont	4	4½x5¼	27.2	3	☆	L	C	T	FS	Strm	Eism	.....	D	B-Li	4	Spic	W	Timk	140	.....	36x4	36x6	Ross	.....	70						
Stewart 7	4460	2575	Cont	4	4½x5¼	27.2	3	☆	R	P	T	FS	Zen	Eism	.....	F	Full	3	Hart	I	IG	156	Det	34x4	34x4†	Ross	Pier	72						
Stoughton D	.....	.....	.....	4	4 x5½	.....	.....	.....	.....	.....	Own	C	Strm	Eism	.....	D	B-Li	3	.....	.....	Shel	140	S-El	36x4	36x7	.....	.....	.....						
Sullivan E	4500	2850	Buda	4	4¼x5½	27.2	3	¼	L	C	V	Fo	Strm	Bosch	.....	L	B-Li	3	Bld	W	Timk	150	Shel	36x4	36x7	Ross	.....	71						
Sullivan EL	4500	2950	Buda	4	4¼x5½	27.2	3	¼	L	C	V	Fo	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	168	Shel	36x4	36x7	Ross	.....	71						
Superior E	3600	2275	Cont	4	4½x5¼	27.2	3	☆	L	C	Idl	Fo	Strm	Eism	.....	F	Full	3	Bld	I	Torb	144	Tut	36x4	36x6	Ross	Pier	.....						
Tower F	4700	2975	Cont	4	4½x5¼	27.2	3	☆	L	C	T	Sp	Strm	Bosch	.....	F	Full	3	Spic	W	Timk	146	Det	36x4	36x7	Ross	Pier	70						
Traffic	3175	1395	Cont	4	3¾x5	22.5	3	☆	R	C	T	Sp	Cart	Bosch	.....	Cov	Covt	3	UM	I	Russ	133	Det	34x3½	34x5	Dit	.....	70						
Transport 50	4285	2585	Cont	4	4½x5¼	27.2	3	☆	L	P	C	FS	Strm	Eism	.....	F	Full	4	Hart	I	Cl	150	Det	36x4	36x6	Jac	Dup	70						
Triumph 2	....	....	Buda	4	3¾x5⅛	.....	.....	.....	.....	.....	H	Sp	Strm	Dix	.....	.....	Selec	3	.....	.....	Russ	140	.....	36x3½	36x5	Lav	.....	.....						
Velie 25-B	5100	2950	Cont	4	4½x5¼	27.2	3	☆	L	C	T	FS	Strm	Bosch	.....	L	B-Li	4	Spic	W	Timk	152	Math	36x4	36x7	Gem	Pier	80						
Vim 22	4500	3150	Her	4	3¾x5½	22.5	4	☆	L	C	McC	C	Zen	Dix	.....	D	Selec	4	Spic	W	Shel	142	Shel	36x4	36x6	Gem	Dup	.....						
Ward La France 2A	5260	3350	.....	4	4½x5¼	27.2	3	☆	L	G	Own	Sp	Zen	Mag	.....	B	B-Li	4	Spic	W	Timk	154	.....	36x4	36x7	Ross	Simp	85						
White 30	4150	3300	Own	4	3¾x5½	22.5	3	....	L	C	C	FS	Own	Mag	.....	D	Selec	4	Own	DR	Own	145	.....	36x4	36x7	Own	.....	.....						

UNIVERSITY OF

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
2 Ton—Continued														**2 Ton—Continued**														
Wichita M	4700	2750	Wau	4	3¾x5¼	22.5	3	¼	L	P	Per	C	Strm	Bosch	.....	C	Covt	3	Own	W	Shel	144	.....	36x4	36x6	Ross	Wau	.....
Wilson E	4500	2800	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	T	FS	Mar	Eism	.....	C	Covt	3	K-B	W	Timk	144	Tut	36x4	36x7	Ross	Pier	80
Winther 49	5300	3000	Wis	4	4 x6	25.6	3	¼	L	P	T	G	Mas	Eism	Bij	F	Full	3	Bld	I	Cl	150	Math	34x4	36x4†	Ross	.....	80
Witt Will WD2-19	4550	2850	Cont	4	4⅛x5¼	27.2	3	5/16	L	G	C	FS	Zen	Eism	.....	D	Selec	3	Spic	W	Timk	144	S-El	36x3½	36x7	Ross	Pier	70
2½ Ton														**2½ Ton**														
Ace	5300	.....	Buda	4	4¼x5½	28.9	3	5/16	L	C	Spir	Fo	Sheb	At-K	West	L	B-Li	4	Spic	W	Timk	156	Math	36x4	36x7	Ross	Pier	.....
Apex E	4500	2450	Buda	4	4¼x5½	33.6	3	¼	L	C	Can	P	Strm	Eism	Opt	F	Full	3	Det	I	Torb	150	Det	36x4	36x6	Lav	Dup	70
Available H 2½	5000	.....	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	T	Sp	Strm	Bosch	.....	B	B-Li	4	Spic	W	Timk	148	Tut	36x4	36x8	Lav	Pier	.....
Beck-Hawkeye	5000	2850	Cont	4	4⅛x5¼	27.2	3	5/16	...	C	P	H	Fo	Strm	Bosch	F	Full	3	Bld	I	⅓-Fl	160	Hig	36x4	36x7	Lav	Pier	70
Bessemer J-2	4500	2785	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	C	FS	Rayf	Bosch	.....	B	B-Li	4	Arv	I	Torb	158	Per	36x4	36x4†	Ross	Pier	67
Bethlehem E	3950	2365	Own	4	4 x4½	25.6	3	¼	L	T	Fed	FS	Sheb	Will	G&D	B	Det	3	UP	I	Russ	144	Shel	34x4	34x6	Lav	Mon	85
Betz D2	4750	2785	Buda	4	4¼x5½	29	3	¼	L	T	T	Fo	Strm	Bosch	.....	D	Selec	3	Spic	W	Flot	135	.....	36x4	36x6	Ross	Pier	75
Brinton F	4500	3000	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	T	Fo	Strm	Bosch	.....	D	Selec	3	Spic	W	Timk	150	Per	36x4	36x4†	Ross	Mon	70
Concord B	4600	3200	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	3	Spic	W	Timk	150	Shel	36x4	36x7	Ross	Simp	75
Corbitt B	5000	3200	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	T	FS	Strm	Eism	.....	L	B-Li	4	Hart	W	Shel	148	Shel	36x4	36x7	Ross	Mon	72
Day-Elder C	4600	2750	Buda	4	4¼x5½	28.9	3	¼	L	C	P	Bus	FS	Zen	Berl	.....	D	Covt	3	Hart	W	Wis	150	Shel	36x4	36x7	Ross	.....	71
DeKalb E 2½	4800	2600	Cont	4	4⅛x5¼	27.8	3	5/16	L	T	Fo	Mas	Eism	.....	.....	F	Full	3	K-B	W	Flot	144	Math	36x5	36x6	Ross	Wau	79
Doane 1919	5000	3750	Wau	4	4¼x5¾	28.9	3	¼	...	P	C	C	Sp	Mas	Bosch	.....	D	Selec	3	D	Ch	Dead	156	.....	36x5	36x7	Lav	Pier	65
Douglas E	4500	2525	Buda	4	4¼x5½	28.9	3	...	L	C	C	Own	Fo	Sheb	Eism	.....	F	Full	4	Arv	I	Torb	155	Own	34x4	36x7	Ross	Pier	.....
Erie 2½	.....	....	Cont	4	4⅛x5¼	27.2	...	...	...	...	...	...	Strm	Bosch	.....	D	.....	4	.....	W	Timk	144	.....	34x4	36x5	.....	Pier	.....
Gary HU	4730	....	Buda	4	4¼x5½	28.9	3	¼	L	P	T	C	Strm	Eism	.....	F	Full	4	Hart	W	Shel	162	Tut	36x4	36x7	Ross	Simp	.....
Gersix G	5200	3150	Buda	6	3½x5¼	29.3	3	5/16	L	C	I	Sp	Strm	Bosch	West	B	Cott	3	Bld	W	Own	150	Tut	36x4	36x7	Ross	Mon	75
Gersix K	5200	3150	Buda	4	4¼x5½	28.9	3	¼	L	C	I	Fo	Strm	Bosch	.....	B	Cott	3	Bld	W	Own	150	Tut	36x4	36x7	Ross	Mon	75
Gramm-Bernstein	5210	3350	Wau	4	4¼x5¾	28.9	3	¼	L	C	C	Sp	Zen	Eism	.....	D	Own	3	Own	W	Shel	156	.....	36x4	36x4†	Ross	Wau	70
Harvey WFA	5300	3000	Buda	4	4¼x5½	28.9	4	¼	L	T	.....	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Shel	150	Shel	36x4	36x7	Ross	Dup	60
Hewitt-Ludlow	4800	3300	Buda	4	4¼x5½	28.9	4	¼	...	...	...	Fo	Strm	.....	.....	B	Cott	4	Spic	.....	Wis	150	.....	36x4	36x7	Ross	.....	.....
Kankakee E	3500	2475	Cont	6	3½x5¼	29.4	3	¼	L	C	H	FS	Zen	Will	Delc	D	Munc	3	Acme	H	Russ	170	Tem	34x4	34x6	Ross	.....	70
Kelly-Springfield K35	5200	3500	Own	4	3¾x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	West	C	Covt	3	Own	C	Dead	144	Per	36x4	36x4†	Gem	Own	89
Kelly-Springfield K36	5540	3500	Own	4	3¾x5¼	22.5	3	¼	L	C	Fed	Fo	Zen	Eism	West	C	Covt	3	Spic	W	⅓-Fl	144	Per	36x4	36x4†	Gem	Own	89
Kimball C	.....	....	Wis	4	4¼x6	28.9	3	¼	L	C	Flex	FS	Zen	Eism	.....	L	Selec	4	Spic	W	Timk	Op	US	36x4	36x7	Lav	Dup	80
Koehler M	5050	2965	Her	4	4 x5½	25.6	4	¼	R	C	T	P	Zen	Eism	.....	D	B-Li	4	Spic	W	Timk	162	.....	36x4	36x7	Lav	Simp	75
Larrabee-Deyo C-D	5200	3000	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	Bus	Sp	Strm	Bosch	.....	L	B-Li	4	M	W	Shel	154	Mer	36x4	36x7	Ross	Pier	.....
Maccar H	5110	3500	Cont	4	4⅛x5½	32.4	3	5/16	L	C	Own	FS	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	162	Mer	36x4	36x4†	Ross	Pier	70
Manly 50	.....	2800	Wau	4	4 x5¾	25.6	3	¼	L	C	T	Sp	Zen	Eism	.....	C	Selec	4	Ther	W	⅓-Fl	156	Shel	36x4	40x8	Lav	Wau	.....
Moreland 19 C	5380	3775	Cont	4	4⅛x5½	32.4	3	5/16	L	C	C	Fo	Mill	Dix	.....	D	Selec	4	Ther	W	Timk	Op	US	36x4	36x7	Ross	.....	.....
Netco H	6500	3400	Cont	4	4⅛x5½	32.4	3	5/16	L	C	RT	Sp	Zen	Eism	.....	L	B-Li	4	Hart	W	Timk	170	Per	36x4	36x8	Ross	.....	75
Noble NW2	5050	3100	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	T	FS	Strm	Eism	.....	B	Full	4	Bld	W	Shel	148	Kal	36x4	36x7	Ross	Pier	80
Old Reliable B	5750	3250	Wis	4	4¼x6	28.9	3	¼	L	C	H	FS	Strm	Bosch	.....	D	Full	3	Spic	W	Shel	160	Shel	34x4	36x4†	Ross	Mon	.....
Paige 50-18	5200	2950	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	T	FS	Strm	Bosch	.....	D	Selec	4	Spic	W	Timk	150	Per	34x4	34x4	Jac	Pier	80
Patriot Washington	4600	3150	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	Own	FS	Strm	Bosch	.....	D	Selec	4	Ther	H	W	156	S-El	34x4	34x7	W	Pier	80
Pittsburgher B	5500	3200	Cont	4	4⅛x5¼	27.2	3	¼	L	C	T	Fo	Strm	Bosch	.....	L	B-Li	4	Spic	W	Shel	160	S-El	36x5	36x7	Ross	Mon	67.5
Reliance	5500	3200	Buda	4	4¼x5½	28.9	3	¼	L	C	H	Fo	Strm	Eism	.....	F	Full	4	Acme	E	Dead	156	Shel	36x4	36x4†	Ross	Pier	90
Rock Falls	2800	....	Buda	6	3½x5¼	29.4	3	5/16	L	P	H	FS	Rayf	Bosch	W	B	GLee	3	Spic	SG	Flot	150	Tut	35x5*	35x5*	Gem	.....	50
Rowe CDW	4600	3250	Wis	4	4 x5	25.6	4	¼	L	C	May	Fo	Zen	Bosch	.....	L	B-Li	4	Arv	W	Timk	164	Shel	34x4	36x4†	Ross	Simp	61
Royal	....	3500	Wis	4	4¼x6	29.8	...	...	...	C	T	T	....	Strm	Bosch	Opt	B	Own	4	Own	W	Timk	132	Mer	36x4½	36x6	Ross	Mon	.....
Sandow J	4500	2975	Cont	4	4⅛x5¼	27.2	3	5/16	L	P	T	FS	Strm	Bosch	.....	D	B-Li	4	K-B	W	Timk	165	GC	36x4	36x7	Ross	Mon	70
Sanford 25	5200	3000	Cont	4	4⅛x5½	27.2	3	¼	L	P	T	Fo	Strm	Bosch	.....	B	B-Li	4	Spic	W	Shel	156	S-El	36x4	36x4†	Ross	Pier	75
Schacht	6000	3650	Buda	4	4¼x5½	28.9	3	¼	R	P	Own	Fo	Sheb	Bosch	.....	H	Selec	3	Flex	W	Own	156	Nat	36x4	36x4†	Own	Dup	70
Schwartz	4000	2675	Cont	4	4⅛x5¼	27.2	3	5/16	L	P	Own	Fo	Sheb	Bosch	.....	H	B-Li	3	Hart	I	Torb	146	.....	36x4	36x7	Ross	Pier	.....
Service 51	5180	3000	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Strm	Eism	.....	D	Selec	4	Spic	W	Timk	160	.....	36x4	36x7	Ross	Simp	75
Sterling	5550	3300	Ster	4	4¼x5¾	28.9	3	¼	R	C	Own	Sp	Zen	Eism	.....	...	B-Li	3	Spic	W	Shel	156	Math	36x4	36x4†	Ross	Wau	80
Stoughton E	....	....	.....	4	4¼x5½	....	...	...	...	C	Own	C	Strm	Eism	.....	D	B-Li	3	.....	...	Shel	155	S-El	36x4	26x4†	.....	.....	.....
Tiffin MW	4890	3050	Cont	4	4⅛x5¼	27.2	3	5/16	L	C	T	FS	Sheb	Bosch	.....	F	Full	3	Acme	W	Timk	148	Kal	36x4	36x4½†	Ross	Pier	80
Triangle B	4900	2850	Rut	4	4⅛x5½	27.2	3	...	L	C	Per	Fo	Strm	Eism	.....	F	Full	4	UP	I	Cl	151	Det	36x4	36x7	Gem	Pier	60
Union B	4800	2465	Cont	4	4⅛x5½	27.2	3	¼	L	P	G&O	Fo	Sheb	Eism	.....	F	Full	4	UP	I	Russ	152	Math	36x4	36x7	Ross	Dup	70
United B	.....	2750	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Strm	Eism	Opt	L	B-Li	4	Bld	W	Shel	Op	.....	36x4	36x7	Ross	Simp	80
U. S. H	5200	3250	Cont	4	4⅛x5¼	27.2	4	5/16	L	C	T	Sp	Strm	Eism	.....	H	B-Li	4	Opt	I	Shel	144	Shel	34x4	34x4†	Lav	Pier	80
Wichita R	5200	2950	Wau	4	3¾x5¼	22.5	3	¼	L	P	Per	C	Strm	.....	.....	C	Covt	3	Own	W	Shel	144	.....	36x4	36x7	Ross	Wau	.....
Wilcox Q	4700	....	Own	4	4¼x5½	28.9	3	¼	L	P	T	Sp	Strm	Mag	.....	W	Selec	4	Own	W	⅓-Fl	135	Shel	36x4	36x3½†	Ross	Pier	80
3 Ton														**3 Ton**														
Denby 25	4790	3250	Cont	4	4⅛x5¼	27.2	3	5/16	R	C	L	FS	Strm	Eism	.....	F	Full	4	UP	I	Russ	150	Det	36x4	36x7	Gem	Mon	79
F. W. D-B	6300	4500	Wis	4	4¾x5½	36.1	3	¼	L	C	T	Fo	Strm	Eism	.....	D	Cott	3	Opt	B	Flot	124	Tut	36x6	36x6	Ross	Pier	55
Forschler B-X	2800	3450	Cont	4	4½x5¼	27.2	3	5/16	L	C	Own	FS	Zen	Bosch	Opt	F	Full	4	Hart	W	Shel	137	Own	34x4	34x8	Ross	Dup	.....
Kimball K	....	....	Wis	4	4¾x5½	36.1	3	¼	T	C	Flex	Fo	Zen	Berl	.....	L	B-Li	4	Spic	W	Shel	Op	US	36x4	36x8	Ross	Dup	80
Manly 60	.....	3350	Wau	4	4¼x5¾	29.8	3	¼	L	C	T	Sp	Zen	Eism	.....	D	Selec	4	Ther	W	Wis	156	Shel	36x5	40x10	Wohl	Wau	.....
O. K. 3-T	4250	3350	Buda	4	4¼x5½	30.0	3	5/16	L	L	T	FS	Zen	Eism	.....	D	Selec	4	Hart	W	Wis	154	Tut	36x4	36x8	Ross	Pier	85
Packard 3-E	7000	4350	Own	4	4½x5½	32.4	3	¼	L	C	T	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	186	.....	36x5	36x5	Own	Own	52.1
Rennoc M	5050	2895	Buda	4	4⅛x5½	27.2	3	¼	L	C	T	Fo	Strm	Spld	.....	W	Warn	4	Hart	W	Wis	144	Row	36x5	36x7	Lav	Pier	65
Riker B	6900	4600	Own	4	4¼x6	28.9	5	¼	L	C	T	FS	B&B	Berl	West	C	Selec	4	Own	W	Own	150	Opt	36x5	36x5†	Ross	Own	75
Rowe GW	5500	4500	H-Sp	8	3¼x5	33.8	3	5/16	L	C	May	Fo	Zen	At-K	West	L	B-Li	4	M	W	Shel	170	Shel	37x7*	42x9*	Ross	.....	55

Vim 23	6000	3950	Her	4	4¼x5½	28.9	5	⅜	L	C	McC	C	Zen	Dix	.....	D	Selec	4	Spic	W	Shel	175	Shel	36x4	36x4†	Gem	Dup	.....				
Ward-LaFrance 3A	5390	3750	.....	4	4⅛x5¼	27.2	3	⅜	L	C	Own	Sp	Zen	Mag	.....	B	B-Li	4	Spic	W	Wis	166	.....	36x4	36x5†	Ross	Simp	85				
White 40	7750	4300	Own	4	3¾x5¾	22.5	....	....	L	C	T	Fo	Own	Mag	.....	D	Selec	4	Own	DR	Own	174	.....	36x5	40x5†	Own	Own	.....				
Winther 69	6400	3900	Wis	4	4 x6	25.6	3	¼	L	P	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	150	Math	36x5	36x5†	Ross	.....	85				
3½ Ton																															
Acason L	6400	....	Wau	4	4¼x6¾	28.9	3	¼	L	P	Can	Sp	Sheb	Eism	.....	B	Cott	4	Bld	W	Timk	172	Det	36x5	36x5†	Ross	Wau	76				
Acme C	6516	3750	Cont	4	4½x5½	32.4	3	⅜	L	C	GO	FS	Rayf	Eism	.....	B	Cott	3	Bld	W	Timk	168	Det	36x5	40x5†	Ross	Dup	80				
Armleder KW	6600	....	Cont	4	4½x5½	32.4	3	⅜	L	C	T	Fo	Zen	Bosch	.....	D	B-Li	3	Opt	W	Timk	156	Math	36x5	36x5†	Ross	Mon	60				
Atterbury 7D LWB	7000	4075	Cont	4	4½x5½	32.4	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	4	Spic	W	Timk	192	SP	36x5	40x5†	Gem	Mon	92				
Atterbury 7D Stan	6910	3875	Cont	4	4¼x5½	32.4	3	¼	L	C	T	Sp	Zen	Eism	.....	L	B-Li	4	Spic	W	Timk	167	SP	36x5	40x5†	Gem	Mon	98				
Available H-3	6400	....	Cont	4	4½x5½	32.4	3	⅜	L	C	T	Sp	Strm	Bosch	.....	B	B-Li	4	Spic	W	Timk	172	Tut	36x5	40x5†	Lav	Pier	....				
Bethlehem F	4983	3465	Own	4	4¾x6	30.6	4	¼	L	C	Fed	FS	Sheb	Will	G&D	B	Det	3	UP	I	Russ	162	Shel	34x4	34x5†	Lav	Mon	85				
Brockway R	6800	3900	Cont	4	4½x5½	32.4	3	⅜	L	C	Bus	FS	Sheb	Eism	.....	L	B-Li	4	Spic	W	Timk	Op	Mer	36x5	36x5†	Gem	Opt	70				
Clydesdale 90	6600	....	Cont	4	4½x5½	32.4	3	⅜	L	C	T	Sp	Zen	Bosch	.....	L	B-Li	4	Spic	W	Timk	170	Stan	36x5	40x5†	Ross	Own	78				
Corbitt A	6780	4000	Cont	4	4⅛x5¼	32.4	3	⅜	L	C	T	Sp	Strm	Eism	.....	L	B-Li	4	Hart	W	Shel	178	Shel	36x5	36x10	Ross	Pier	75				
Couple Gear	9000	6000	Wis	4	5.1x5½	35	4	⅜	T	G	H	Fo	Strm	Eism	.....	....	Own	5	Own	B	Own	144	Tut	36x4†	36x4†	Ross	.....	55				
Dart L	6740	4000	Buda	4	4½x6	32.4	3	¼	L	C	C	Fo	Zen	Eism	.....	W	Warn	4	Spic	W	Timk	160	Per	36x5	36x10	Ross	Simp	75				
Day-Elder F	5600	3350	Cont	4	4½x5½	32.4	3	⅜	R	C	Bus	FS	Zen	Berl	.....	D	B-Li	4	Hart	W	Wis	165	Shel	36x5	36x5†	Ross	Mon	73				
Denby 27	6890	4250	Cont	4	4½x5½	32.4	3	⅜	L	C	L	FS	Strm	Eism	.....	D	Warn	4	UP	I	Cl	170	Det	36x5	36x10	Ross	Simp	78				
Diamond T-LB	6425	4390	.....	4	4½x5½	32.4	3	⅜	L	C	T	FS	Strm	Bosch	.....	L	.....	4	Spic	W	.....	180	Math	36x5	36x5†	.....	Pier	.....				
Dorris K7	6500	3800	Own	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Strm	Bosch	West	D	Warn	4	Spic	W	Timk	176	Row	36x5	36x10	Ross	Own	70				
Duplex E	6050	4000	Buda	4	4¼x5½	28.9	3	¼	O	C	L	FS	Sheb	Eism	.....	L	B-Li	4	Bld	I	Own	130	Tut	36x6	36x6	Lav	Dup	60				
Erie 3½	....	....	Cont	4	4½x5½	32.4	....	....	....	C	.....	.....	Strm	Bosch	.....	D	.....	4	.....	W	Timk	168	.....	36x5	40x5	.....	Pier	.....				
Fageol 4500	7300	....	Wau	4	4¾x6¾	36.1	3	¼	L	C	Spi	Sp	Zen	Dix	.....	B	Selec	5	Spic	W	Timk	156	Math	36x5	36x5†	Ross	Wau	C..				
Federal W	7000	3350	Cont	4	4½x5½	32.4	3	⅜	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	156	Math	36x5	36x5†	Gem	Mon	79				
Garford 77C	7235	4300	Wis	4	4¾x5½	36.1	3	¼	T	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	W	Timk	128	Per	36x5	40x5†	Ross	Simp	.....				
Gary	7000	3750	Buda	4	4½x6	32.4	3	¼	L	C	T	Fo	Strm	Eism	.....	W	B-Li	4	Bld	W	Timk	162	S-El	36x5	40x5†	Ross	Simp	.....				
Giant 17	6800	3850	Cont	4	4½x5½	32.4	3	⅜	L	C	C	FS	Strm	Eism	.....	L	Warn	4	Spic	W	Timk	116	Det	36x5	36x5†	Ross	Pier	70				
G. M. C. 71A	7540	3750	Cont	4	4½x5½	32.4	3	⅜	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	163	Det	36x5	40x5†	Jac	Mon	75				
G. M. C. 71B	7655	3800	Cont	4	4½x5½	32.4	3	⅜	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	187	Det	36x5	40x5†	Jac	Mon	75				
Gramm-Bernstein	6790	4000	Wau	4	4½x5¾	32.4	3	¼	L	C	T	Sp	Zen	Eism	.....	D	Own	4	Own	W	Shel	158	.....	36x5	40x5†	Ross	Wau	70				
Hahn F	7000	....	Cont	4	4½x5½	32.4	4	¼	L	C	Own	Fo	Strm	Bosch	.....	D	B-Li	4	Spic	W	Timk	Op	Del	36x5	36x5†	Ross	Pier	.....				
Hall	6100	3750	Cont	4	4½x5½	32.4	3	⅜	L	P	L	FS	Zen	Bosch	.....	L	B-Li	..	K-B	W	Timk	Op	Det	36x5	36x5†	Gem	Dup	.....				
Harvey WHA	7700	3900	Buda	4	4½x6	32.4	4	¼	L	P	.....	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Shel	160	Shel	36x5	36x5†	Ross	Dup	60				
Hendrickson J	....	3800	Buda	4	4¼x5¾	28.9	3	¼	L	P	T	Fo	Strm	Dix	.....	D	Full	4	Ther	W	Timk	Op	Tut	36x5	36x5†	Ross	Pier	80				
Hewitt-Ludlow	6300	4000	Buda	4	4¼x5½	28.9	.....	.....	.....	.....	.....	.....	Strm	Bosch	.....	B	Cott	4	Spic	....	Wis	156	.....	36x5	36x5†	Ross	.....	.....				
Hurlburt	6400	4400	Buda	4	4½x6	32.4	3	¼	L	C	T	FS	Flch	Eism	.....	D	B-Li	4	Spic	W	Flot	152	.....	36x5	36x5	Ross	Dup	....				
Indiana R	6300	3450	Rut	4	4⅜x5½	30.6	3	¼	L	C	T	Fo	Strm	Eism	.....	B	Selec	4	Acme	W	½-Fl	156	S-El	36x5	36x5†	Wohl	Pier	75				
Kalamazoo K	....	3900	Cont	6	3¾x5¼	33.8	3	¼	L	P	Hvn	FS	Strm	Bosch	Dyn	F	Full	4	Acme	W	Shel	100	Kal	36x5	36x5†	Ross	Pier	.....				
Kelly-Springfield K-40	8285	4400	Own	4	4½x6½	32.4	3	¼	T	C	Fed	Fo	Rayf	Eism	West	C	Covt	3	Own	C	Dead	150	Per	36x5	40x5†	Gem	Own	93				
Kissel-Heavy Duty	7000	3975	Own	4	4¼x5½	28.9	3	⅜	L	C	McC	Sp	Strm	Eism	.....	W	Warn	4	Spic	W	Shel	168	Shel	36x5	36x5†	Ross	Pier	80				
Larrabee-Deyo A-B	6850	3950	Cont	4	4½x5½	32.4	3	⅜	L	C	Bus	Sp	Strm	Bosch	.....	L	B-Li	4	M	W	Shel	172	Mer	36x5	36x5†	Ross	Pier	.....				
Maccar M	6550	4300	Cont	4	4½x5½	32.4	3	⅜	L	C	Own	FS	Strm	Bosch	.....	L	B-Li	3	Spic	W	Timk	174	Mer	36x5	36x5†	Ross	Pier	70				
Mack AC	8070	4600	Own	4	5 x6	40	2	....	L	C	T	FS	Strm	Dix	.....	D	Selec	3	.....	C	Dead	Op	.....	36x5	40x5†	Ross	Own	46				
Master A	6900	3990	Buda	4	4½x6	32.4	4	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Spic	W	Timk	158	Det	36x5	40x5	Ross	Pier	72				
Master AL	7200	4090	Buda	4	4½x6	32.4	4	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Spic	W	Timk	194	Det	36x5	40x5†	Ross	Pier	72				
Menominee G	....	3880	Cont	4	4½x6½	32.4	3	¼	T	C	T	FS	Strm	Eism	.....	F	Full	4	Spic	W	Timk	160	Tut	36x5	36x6†	Ross	Mon	80				
Nelson & Le Moon F3½	6000	3750	Cont	4	4¼x6½	32.4	3	¼	T	C	T	Sp	Zen	Eism	.....	L	B-Li	4	Own	W	Timk	Op	Tut	36x5	36x5†	Lav	Mon	80				
Northway B3	....	....	.....	4	4 x6	.....	.....	.....	.....	.....	.....	.....	.....	Mag	.....	D	.....	...	.....	...	.....	160	S-El	36x5	40x5†	Ross	.....	.....				
Old Reliable C	6650	4000	Wis	4	4¼x6	28.9	3	¼	L	C	T	FS	Strm	Bosch	.....	D	Full	..	Spic	W	Shel	160	Shel	34x5	36x5†	Ross	Pier	82½				
Oneida D	7270	3700	Cont	4	4½x5½	32.4	3	⅜	L	C	T	FS	Rayf	Bosch	.....	D	Cott	3	Spic	W	Timk	160	Math	36x5	36x5†	Ross	Simp	80				
Paige 51-18	7000	3950	Cont	4	4½x5½	32.4	3	⅜	L	C	L	FS	Strm	Bosch	.....	D	Selec	4	Spic	W	Timk	160	Per	36x5	36x5†	Jac	Simp	80				
Parker J9	6800	4150	Wis	4	4½x6	32.4	3	.....	L	C	Own	F	Strm	Bosch	West	L	Warn	4	Arv	W	Own	160	S-El	36x5	40x5†	Ross	Mon	85				
Republic 20	6400	3595	Cont	4	4½x5½	32.4	3	¼	L	C	T	FS	Strm	Eism	.....	D	Full	4	K-B	I	Torb	165	S-El	36x5	36x10	Jac	Pharo	....				
Rowe DEW	6520	3800	Wis	4	4¼x6	28.9	4	¼	L	C	May	Fo	Zen	Bosch	.....	L	B-Li	4	M	W	Shel	156	Shel	36x5	36x5†	Ross	Simp	54				
Sandow M	6500	3995	Cont	4	4½x5½	32.4	3	⅜	L	C	T	FS	Strm	Bosch	.....	D	B-Li	4	K-B	W	Timk	175	GC	36x5	36x5†	Ross	Mon	70				
Sanford 35	6600	3975	Cont	4	4½x5½	32.4	3	⅜	L	P	T	Fo	Strm	Bosch	.....	B	B-Li	4	Spic	W	Shel	174	S-El	36x5	36x5†	Ross	Pier	75				
Schacht	6500	3950	Buda	4	4¼x5½	28.9	3	¼	R	P	Own	Fo	Sheb	Bosch	.....	H	Own	3	Flex	W	Own	168	Nat	36x5	36x5†	Own	Dup	70				
Selden 3½A	7100	3850	Cont	4	4½x5½	40	3	⅜	L	P	Bus	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	162	Per	36x5	36x10	Gem	Pier	70				
Service 71	6700	3900	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Strm	Eism	.....	D	Selec	4	Spic	W	Timk	171	.....	36x5	36x5†	Ross	Simp	70				
Service 76	7100	4200	Buda	4	4½x6	32.4	3	¼	L	C	T	Fo	Strm	Eism	.....	D	Selec	4	Spic	W	Timk	171	.....	36x5	36x5†	Ross	Simp	70				
Signal M	7070	4100	Cont	4	4½x5½	32.4	3	⅜	L	C	McC	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Timk	168	Det	36x5	40x5†	Lav	Pier	80				
Standard 66	6480	3675	Cont	4	4½x5½	32.4	3	⅜	L	C	T	FS	Strm	Eism	.....	D	B-Li	4	Spic	W	Timk	160	.....	36x5	36x5†	Gem	Mon	75				
Sterling	8300	4325	Ster	4	4¼x6¾	28.9	3	¼	L	C	Own	Sp	Rayf	Eism	.....	N	Own	3	Spic	W	Timk	162	Math	36x5	40x5†	Ross	Wau	90				
Stewart 10	6080	3500	Cont	4	4½x5½	32.4	3	⅜	L	P	.....	FS	Zen	Eism	.....	F	Full	4	Hart	I	IG	165	Det	36x5	36x5†	Ross	Pier	80				
Tiffin PW	6850	3980	Cont	4	4½x5½	32.4	3	⅜	L	P	T	Sp	Sheb	Bat	.....	F	Full	3	Acme	W	Shel	160	Kal	36x5	36x5†	Ross	Pier	80				
Titan	7350	4300	Buda	4	4½x6	32.4	3	¼	L	P	T	Fo	Strm	Eism	.....	D	Cott	4	.....	I	C	162	Math	36x5	40x5†	Lav	Simp	70				
Tower G	6800	4100	Cont	4	4½x5½	32.4	3	¼	L	C	T	Sp	Strm	Bosch	.....	F	Full	4	Spic	W	Timk	165	Det	36x5	36x5†	Ross	Pier	70				
Twin City 4 Wheel D-B	7200	4750	Wis	4	5⅛x6	42	3	.....	T	C	H	FS	Strm	K-W	.....	M	Cott	3	.....	I	½-Fl	140	.....	36x6	36x6	Ross	Pier	60				
United C	....	3395	Buda	4	4¼x5½	42	4	¼	L	C	.....	Fo	Strm	Eism	Opt	L	B-Li	4	Bld	I	Cl	160	.....	36x5	36x5†	Ross	Simp	80				
U. S. J.	7000	3950	Cont	4	4½x5½	32.4	3	⅜	L	C	T	Sp	Strm	Eism	.....	H	B-Li	4	Opt	W	Shel	162	Shel	36x5	35x5†	Lav	Pier	80				
Velie 26-B	7400	3900	Cont	4	4½x5½	32.4	3	⅜	L	C	T	FS	Strm	Bosch	.....	L	B-Li	4	Spic	W	Timk	174	Math	36x5	36x5†	Gem	Pier	80				
Victor M	6600	3800	Cont	4	4½x5½	32.4	3	⅜	L	C	Own	FS	Strm	Bosch	.....	L	B-Li	4	Spic	W	Timk	176	S-El	36x6	36x5†	Gem	.....	.....				
Ward La France 3½-A	5800	3900	.....	4	4½x5½	32.4	3	⅜	L	C	Own	Sp	Zen	Mag	.....	B	B-Li	4	Spic	W	Wis	170	.....	36x5	40x5†	Ross	Simp	85				
Wichita O	6500	3750	Wau	4	4½x5¾	32.4	3	¼	...	C	EM	C	Strm	.....	.....	C	B-Li	4	Own	W	Shel	165	.....	36x5	36x5†	Ross	Wau	.....				
Wilcox P	6300	....	Own	4	4¼x5	28.9	3	¼	L	C	T	Sp	.....	Bosch	.....	C	Selec	4	Own	W	½-Fl	139	Shel	36x5	36x5†	Own	Pier	....				
Wilson G	6800	3800	Cont	4	4½x5½	32.4	3	⅜	L	C	T	FS	Mar	Eism	.....	D	Warn	4	K-B	W	Timk	160	Tut	36x5	36x5†	Ross	Pier	80				
Winther 479	7700	4900	Wis	4	4¼x6	28.8	3	¼	L	P	T	G	Mas	Eism	Bij	B	Full	4	Bld	I	Cl	158	Math	36x5	36x5†	Ross	.....	65				
4 Ton																															
Bessemer K-2	6740	3985	Cont	4	4½x5½	32.4	3	⅜	L	C	C	FS	Rayf	Bosch	.....	B	B-Li	4	Spic	I	Torb	175	Per	36x5	36x10†	Ross	Pier	75				
Gabriel F	5800	4300	Buda	4	4½x6	32.4	3	¼	L	C	T	Fo	Rayf	Bosch	L-N	B	B-Li	4	Spic	W	Timk	180	Mer	36x5	40x10	Gem	Dup	65				
Highway-Knight	7400	4800	.....	4	4 x6	25.6	.....	.....	.....	T	Own	Fo	Zen	Mag	.....	.....	.....	4	.....	W	.....	159	.....	36x5	36x6†	.....	.....	.....				
Kelly-Springfield K-45	8730	4550	Own	4	4½x6½	32.4	3	¼	T	C	Fed	Fo	Rayf	Eism	West	C	Covt	3	Own	C	Dead	150	Per	36x5	40x6†	Gem	Own	93				
Kimball E	....	....	Wis	4	5.1x5½	38.9	3	¼	T	C	Flex	Fo	Zen	Berl	.....	L	B-Li	4	Spic	W	Shel	Op	US	36x5	40x10	Ross	Dup	80				

UNIVERSITY OF

G. C. M. Model	Chassis Weight	Chassis Price	Engine	No. of Cylinders	Bore and Stroke	Horse Power	Piston Rings Per Cylinder	Piston Ring Groove Width	Valve Location	How Cooled	Radiator Make or Type	Lubrication	Carburetor	Ignition System	Engine Starter	Clutch Make or Type	Transmission	Speeds Forward	Universal	Drive	Rear Axle	Wheelbase	Springs	Front Tires	Rear Tires	Steering Gear	Governor	Pr. Cent of Weight on Rear Wheels
4 Ton—Continued																												
King Zeitler	6500	4200	Cont	4	4½x5½	32.4	3	5/32	L	G	T	FS	Strm	Bosch	.....	L	B-Li	4	Ther	W	Timk	180	Mer	36x5	40x5†	Lav	Pier	80
Moreland 19G	7810	4875	Cont	4	4¾x6	36.1	3	¼	L	C	C	FS	Mill	Dix	.....	D	Selec	4	Ther	W	Timk	162	US	36x5	40x5†	Ross	Cont	.....
Noble WW4	7170	3950	Cont	4	4½x5½	32.4	3	5/32	L	C	T	FS	Strm	Eism	.....	B	Full	4	Acme	W	Shel	168	Kal	36x5	36x5†	Ross	Pier	80
Packard 4E	7460	4550	Own	4	4½x5½	32.4	3	¼	L	C	T	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	186	.....	36x5	40x5	Own	Own	55
Riker BB	7200	4700	Own	4	4¼x6	28.9	5	¼	L	T	T	FS	B&B	Berl	West	C	Selec	4	Own	W	Own	150	Opt	36x5	36x6†	Ross	Own	77
Shaw M4	....	1850	Cont	4	3¾x5	22.4	3	5/32	L	T	T	Fo	Zen	Bosch	.....	D	B-Li	3	Spic	W	Timk	130	Per	34x4½	34x4½*	Gem	.....	.....
Union C	6600	3500	Wis	4	4¼x6	28.9	3	¼	L	P	G&O	Fo	Sheb	Eism	.....	F	Full	4	UP	I	Torb	171	Math	36x6	36x10	Ross	Dup	75
Winther 89	7600	4200	Wis	4	4¼x6	28.8	3	¼	L	P	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	156	Math	36x5	40x5†	Ross	.....	80
5 Ton																												
Acason M	8350	.....	Wau	4	4¾x6¾	36.1	3	¼	L	P	Can	Sp	Sheb	Eism	.....	B	Cott	3	Bld	W	Timk	187	Det	36x6	40x6†	Ross	Wau	77
Acme E	8860	5475	Cont	4	4¾x6	36.1	3	¼	L	C	GO	Fo	Rayf	Eism	.....	B	Cott	3	Bld	W	Timk	180	Det	36x6	40x6†	Ross	Cont	80
Atterbury 8 E	9635	4975	Cont	4	4¾x6	36.1	3	¼	L	C	T	Fo	Zen	Eism	.....	L	B-Li	4	Spic	W	Timk	167	SP	36x5	40x6†	Gem	Cont	98
Available 5	8100	.....	Cont	4	4¾x6	36.1	3	5/32	L	C	T	Sp	Strm	Bosch	.....	B	B-Li	4	Spic	W	Timk	172	Tut	36x6	40x6†	Ross	Pier	.....
Brockway T	8800	5000	Cont	4	4¾x6	36.1	3	¼	L	C	Bus	Fo	Sheb	Eism	.....	L	B-Li	4	Spic	W	Timk	174	Mer	36x6	40x6†	Gem	Dup	.....
Clydesdale 120B	8500	.....	Cont	4	4¾x6	36.1	3	¼	R	C	T	Fo	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	176	Stan	36x5	40x6†	Ross	Own	76
Corbitt AA	8000	5000	Cont	4	4¾x6	36.1	3	¼	L	C	McC	FS	Strm	Eism	.....	D	B-Li	4	Bld	W	Shel	178	Shel	36x6	40x6†	Ross	Cont	75
Couple Gear	11000	6500	Wis	4	5¼x7	42	4	5/32	L	G	H	Fo	Strm	Eism	Own	....	Own	5	Own	B	Own	144	Tut	36x5†	36x5†	Own	.....	60
Day-Elder E	8200	4500	Buda	4	4½x6	32.4	3	¼	L	P	Bus	Fo	Zen	Berl	.....	D	B-Li	4	Hart	W	Shel	170	Shel	36x5	40x6†	Ross	Mon	73
Denby 210	8590	4900	Cont	4	4½x5½	32.4	3	5/32	L	C	L	FS	Strm	Eism	.....	D	Warn	4	UP	I	Cl	170	Det	36x6	40x12	Ross	Simp	80
Diamond T-R	7920	5190	.....	4	4½x5½	32.4	3	5/32	L	C	T	FS	Strm	Bosch	.....	L	.....	4	Spic	W	.....	170	Math	36x6	40x6†	.....	Pier	.....
Diamond T-S	8790	5660	.....	4	4¾x6	36	3	5/32	L	C	T	FS	Strm	Bosch	.....	L	.....	4	Spic	W	.....	180	Math	36x6	40x6†	.....	Pier	.....
Fageol 5300	8300	....	Wau	4	4¾x6¾	36.1	3	¼	L	C	Spi	Sp	Zen	Dix	.....	B	Selec	5	Spic	W	Timk	156	Math	36x6	40x6†	Ross	Wau	80
Federal X	8100	4400	Cont	4	4½x5½	32.4	3	5/32	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	156	Math	36x6	40x6†	Gem	Mon	80
Garford 68	8870	5000	Wis	4	4¾x5½	36.1	3	¼	L	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	C	Dead	128	Per	36x6	40x6†	Ross	Simp	.....
Gary M	8500	4650	Buda	4	5 x6½	40	.....	.....	L	C	T	Fo	Strm	Eism	.....	L	B-Li	.....	.....	.....	.....	170	S-El	36x6	40x6	Ross	.....	.....
G. M. C. 101-A	8485	4350	Cont	4	4½x5½	32.4	3	5/32	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	163	Det	36x6	40x6†	Lav	Mon	75
G. M. C. 101-B	8655	4400	Cont	4	4½x5½	32.4	3	5/32	L	C	McC	FS	Mar	Eism	.....	D	Selec	4	UM	W	Timk	187	Det	36x6	40x6†	Lav	Mon	75
Gramm-Bernstein	8700	5000	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	Sp	Zen	Eism	.....	C	Own	4	Own	W	Shel	168	.....	36x6	40x6†	Ross	Wau	70
Hall	7400	4850	Cont	4	4½x5½	32.4	.....	.....	L	P	L	FS	Zen	Bosch	.....	L	B-Li	...	K-B	C	Timk	Op	Per	36x4	40x6†	Gem	Dup	.....
Harvey WKA	8900	5000	Buda	4	4½x6	32.4	4	¼	L	P	.....	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Shel	160	Shel	36x6	40x6†	Ross	Dup	60
Hewitt-Ludlow	8000	5100	Buda	4	4½x6	32.4	.....	.....	.....	.....	.....	.....	Strm	Bosch	.....	B	Cott	4	Spic	C	.....	168	.....	36x6	40x6†	Lav	.....	.....
Highway-Knight	....	5600	.....	4	4 x6	25.6	.....	.....	.....	T	Own	Fo	Zen	Mag	.....	.....	.....	4	.....	W	.....	159	.....	36x5	40x6†	.....	.....	.....
Hurlburt	7800	5250	Buda	4	4½x6	32.4	3	¼	L	C	T	FS	Fleh	Eism	.....	D	B-Li	4	Spic	W	Flot	156	.....	36x5	40x6†	Ross	Dup	.....
Indiana L	8300	4600	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	Sp	Strm	Eism	.....	B	Selec	4	Acme	W	½-Fl	167	S-El	36x5	40x6	Wohl	Wau	78½
Kelly Springfield K-50	9175	5150	Own	4	4½x6½	32.4	3	¼	L	T	Fed	Fo	Rayf	Eism	West	C	Covt	3	Own	C	Dead	150	Per	36x6	40x6†	Gem	Own	93
Kimball F	....	....	Wis	4	5½x6	42	3	¼	L	C	Flex	Fo	Zen	Berl	.....	L	B-Li	4	Spic	W	Shel	Op	US	36x6	40x12	Ross	Dup	80
Kissel-Goliath	7500	4785	Own	4	4¼x5½	28.9	3	5/32	L	C	McC	Sp	Strm	Eism	.....	W	Warn	4	Spic	W	Shel	180	Shel	36x6	36x6†	Ross	Pier	75
Larrabee-Deyo T	8500	4750	Cont	4	4½x5½	36.1	3	5/32	L	C	Bus	Sp	Strm	Bosch	.....	L	B-Li	4	M	W	Shel	176	Mer	36x6	40x6†	Ross	Pier	.....
Maccar G	8200	5250	Wis	4	5.1x5½	41.5	3	¼	L	C	Own	FS	Zen	Bosch	.....	L	B-Li	4	Spic	W	Timk	186	Mer	36x5	40x6†	Ross	Pier	70
Master B	8000	4990	Buda	4	4¾x6½	32.4	4	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Spic	W	Timk	170	Det	36x6	40x6†	Ross	Pier	72
Master BL	8200	5090	Buda	4	4¾x6½	32.4	4	¼	L	C	T	FS	Mas	Eism	.....	D	B-Li	4	Spic	W	Timk	194	Det	36x6	40x6†	Ross	Pier	72
Menominee J	....	4950	Cont	4	4¾x6	32.4	3	5/32	L	C	T	FS	Strm	Eism	.....	F	B-Li	4	Spic	W	Timk	160	Tut	36x6	40x6†	Ross	Mon	80
Moreland 19-J	9000	5350	Cont	4	4¾x6	36.1	3	¼	L	C	Own	Fo	Mill	Dix	.....	D	Selec	4	Ther	W	Timk	192	US	36x6	40x6†	Ross	Cont	.....
Nelson & Le Moon F5	8000	4750	Buda	4	4½x6	32.4	4	¼	L	C	T	Fo	Strm	Bosch	West	L	B-Li	4	Own	W	Timk	Op	Tut	36x6	40x6†	Lav	Mon	80
Old Reliable D	8400	5000	Wis	4	5.1x5½	41.6	3	¼	L	C	T	FS	Strm	Bosch	.....	D	D-Sea	4	Spic	W	Shel	168	Shel	36x5	40x6†	Ross	Opt	.....
Oneida E	9315	4750	Cont	4	5¼x5¾	44.1	3	5/32	L	C	C	FS	Strm	Bosch	Opt	M	Cott	3	Spic	W	Timk	180	Math	36x6	40x12	Ross	Pier	82½
Packard 5-E	8650	5450	Own	4	5 x5½	40	3	¼	L	C	T	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	186	.....	36x6	40x6	Own	Own	57.2
Parker M-9	8450	5225	Cont	4	4¾x6	36.1	3	¼	L	C	Own	Fo	Strm	Bosch	West	L	Warn	4	K-B	W	Timk	160	S-El	36x6	40x6†	Ross	Cont	85
Pierce-Arrow R-9	8100	5500	Own	4	4⅞x6	38.3	4	5/32	T	P	T	Fo	Own	Eism	.....	C	Selec	3	Own	W	Flot	168	S-El	36x5	40x6†	Own	Own	85
Rowe FW	8350	4900	Wis	4	4¾x5½	36.1	4	¼	T	C	May	Fo	Zen	Bosch	.....	L	B-Li	4	M	W	Shel	171	Shel	36x6	40x6	Ross	Simp	57
Royal	....	5000	Wis	4	4¾x5½	36.1	4	¼	T	C	T	...	Strm	Bosch	Opt	.....	Own	...	Own	W	Timk	168	Mer	36x6	40x6†	Ross	Mon	.....
Sandow L	7800	4775	Cont	4	4½x5½	32.4	3	5/32	L	P	T	FS	Strm	Bosch	.....	D	B-Li	4	K-B	W	Timk	175	GC	36x6	40x6†	Ross	Mon	70
Sanford 50	7400	4750	Cont	4	4½x5½	32.4	3	5/32	L	P	T	Fo	Strm	Bosch	.....	B	B-Li	4	Spic	W	Shel	174	S-El	36x5	40x6†	Ross	Pier	75
Schacht	8000	4950	Buda	4	4½x6	32.4	3	¼	R	P	Own	Fo	Sheb	Bosch	.....	H	Own	8	Flex	W	Own	168	Nat	36x5	40x6†	Own	Dup	70
Selden DL	8800	5000	Cont	4	4½x5½	32.4	3	5/32	R	P	Bus	FS	Strm	Eism	.....	L	B-Li	4	Spic	W	Timk	170	Per	36x6	40x12	Ross	Pier	70
Service 101	8240	5000	Buda	4	4½x6	32.4	3	¼	L	C	T	Fo	Strm	Eism	.....	D	Selec	4	Spic	W	Timk	171	.....	36x6	36x6†	Ross	Simp	75
Signal R	8200	5100	Cont	4	4½x6	36.1	3	¼	L	C	McC	FS	Strm	Eism	.....	B	B-Li	4	Spic	W	Timk	180	Det	36x6	40x6†	Ross	Cont	80
Standard 86	8000	4650	Cont	4	4½x5½	32.4	3	5/32	L	C	T	FS	Strm	Eism	.....	D	B-Li	4	Spic	W	Timk	160	.....	36x6	40x6†	Gem	Mon	75
Sterling	9600	5100	Ster	4	4¾x6¾	36.1	3	¼	L	C	Own	Sp	Rayf	Eism	.....	M	Own	3	Spic	W	Timk	168	Math	36x6	40x6†	Ross	Wau	90
Tiffin	8400	5000	Cont	6	3¾x5¼	33.7	3	5/32	L	C	T	FS	Sheb	Bosch	West	D	Covt	3	Acme	W	Shel	168	Kal	36x6	40x6†	Ross	.....	80
Titan	9100	5150	Buda	4	4½x6	32.4	3	¼	L	P	T	Fo	Strm	Eism	.....	D	Cott	4	.....	I	Cl	156	Shel	36x5	40x6†	Lav	Simp	70
Twin City 4 Wheel Dr. A	8000	5250	Wis	4	5⅜x6	42	3	¼	L	C	H	FS	Strm	K-W	.....	M	Cott	3	.....	I	½-Fl	140	.....	36x7	.....	Ross	Pier	60
United V	....	4590	Buda	4	4½x6	42	4	¼	L	C	.....	Fo	Strm	Eism	.....	L	B-Li	4	Bld	I	Cl	160	.....	36x5	40x6†	Ross	Simp	80
Vim 24	8500	....	Her	4	4¼x5½	28.9	5	5/32	L	C	McC	C	Zen	Dix	.....	D	Selec	4	Spic	W	Shel	150	Shel	36x5	40x5†	Gem	Dup	.....
White 45	7925	5000	Own	4	4¼x5¾	28.9	.....	.....	L	C	T	Fo	Own	Mag	.....	D	Selec	4	Own	DR	Own	174	.....	36x6	40x6†	Own	Own	.....
U. S. K.	8500	4850	Wau	4	4¾x6¾	36.1	.....	¼	L	C	T	Fo	Own	Mag	.....	D	Selec	3	Opt	W	Shel	168	.....	36x5	40x6†	Lav	Wau	80
Wilcox W	9000	....	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	Sp	.....	.....	.....	C	Selec	4	Spic	W	½-Fl	162	Shel	36x5	40x12	Gem	.....	.....
Wilson H	7500	4600	Cont	4	4½x5½	32.4	3	5/32	L	C	T	FS	Mas	Eism	.....	D	Warn	4	K-B	W	Timk	160	Tut	36x6	40x6†	Ross	Pier	80
Winther 109	8300	5000	Wis	4	4½x6	32.4	3	¼	L	C	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	162	Math	36x5	40x6†	Ross	Dup	80

5½, 6 and 7 Ton

Doane 1919	8500	5825	Wau	4	4¾x6¾	36.1	3	....	L	C	C	Sp	Mas	Bosch	.....	D	Selec	3	D	C	Dead	178	.....	36x6	40x6†	Lav	Wau	79
Hall	8000	4850	Cont	4	4½x5½	32.4	....	....	L	P	L	FS	Zen	Bosch	.....	.....	B-Li	...	K-B	W	Timk	Op	Det	36x5	40x6†	Gem	Dup	.....
Mack AC 5½	8650	5250	Own	4	5 x6	40	2	....	L	C	T	FS	Rayf	Bosch	.....	C	Selec	4	Spic	W	Timk	105	Per	36x5	40x5†	Ross	Simp	50
Garford 69	9350	5300	Wis	4	5.1x5½	41.5	3	¼	T	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	C	Dead	128	Per	36x6	40x7†	Ross	Simp	.....
Kelly-Springfield K-60	9500	5500	Own	4	4½x6½	32.4	3	¼	T	C	T	Fed	Fo	Rayf	Eism	West	C	Covt	3	Own	C	Dead	150	Per	36x6	40x7†	Gem	Own	93
Packard 6-E	8925	5700	Own	4	5 x5½	40	3	¼	L	C	T	Fo	Own	Dix	Bij	D	Selec	4	Spic	W	Flot	186	SP	36x6	40x7	Own	Own	58.5
Royal 6	....	5400	Wis	4	5½x6	42.2	....	....	....	C	T	....	....	Strm	Bosch	Opt	.....	Own	...	Own	W	Timk	168	Mer	36x6	40x6†	Ross	Mon	.....
Tiffin 6-Ton	9000	5200	Cont	6	3¾x5¼	33.7	3	✱	L	C	T	FS	Sheb	Bosch	West	D	Covt	3	Acme	W	Shel	168	Kal	36x6	40x12	Ross	.....	80
Winther 129	9000	5250	Wis	4	4¾x6	36.1	3	¼	T	C	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	162	Math	36x6	40x6	Ross	Dup	80
Winther 149	9600	5500	Wis	4	5½x6	42	3	¼	T	C	T	G	Mas	Eism	Bij	B	B-Li	4	Bld	I	Cl	162	Math	36x6	40x7	Ross	Dup	80
Couple Gear 6	11000	7200	Wis	4	5¼x7	44.1	4	✱	T	G	H	Fo	Strm	Eism	Own	.....	Own	5	Own	B	Own	144	Tut	36x5†	36x6	Own	.....	65
Mack AC 7½	10950	5500	Own	4	5 x6	40	2	....	L	C	T	FS	Strm	Dix	.....	D	D-Sea	3	.....	C	Dead	Op	.....	36x7	40x7	.....	Own	.....
Old Reliable K, L, M	10240	6000	Wau	4	4¾x6¾	36.1	3	¼	L	C	T	FS	Strm	Bosch	.....	D	D-Sea	4	Spic	C	Shel	136	Shel	36x6	40x7†	Ross	Wau	.....
Royal 7	....	....	Wis	4	5¼x7	44.2	....	....	....	C	T	....	....	Strm	Bosch	Opt	.....	Own	...	.....	W	Timk	168	Mer	36x7	40x7†	Ross	Mon	.....
Sterling 7	11000	5600	Ster	4	4¾x6¾	36.1	3	¼	L	C	Own	Sp	Rayf	Eism	.....	M	Own	3	UM	C	Own	168	Math	36x6	40x7†	Ross	Wau	90
Wichita S	9200	5400	Beav	4	4½x6	32.4	3	¼	O	P	EM	C	Strm	.....	.....	C	Own	4	Own	.....	Own	165	.....	36x6	40x6†	Ross	Dup	.....

Gasoline Tractor-Trucks

Columbia T	4000	2350	Cont	4	4¼x5¼	27.2	3	✱	L	C	T	FS	Shk	Dix	.....	C	Covt	3	Spic	I	Russ	112	Per	36x4	36x6	Own	Pier	.....
Federal Light-Duty	4100	2500	Cont	4	4½x5¼	27.2	3	✱	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	102	Math	36x3½	36x5	Gem	Mon	80
Federal Heavy Duty	6800	3475	Cont	4	4½x5½	32.4	3	✱	L	C	T	Sp	Zen	Eism	.....	B	Own	4	Spic	W	Timk	108	Math	36x5	36x5†	Gem	Mon	80
Garford 70BT	4750	3090	Buda	4	4¼x5½	28.9	3	¼	L	C	T	Fo	Rayf	Spld	.....	L	Selec	4	Spic	W	Timk	119	Per	36x4	36x7	Ross	Simp	.....
Garford 77KT	6990	4400	Wis	4	4¾x5½	36.1	3	¼	T	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	W	Timk	105	Per	36x5	40x5†	Ross	Simp	.....
Garford 68CT	8450	5100	Wis	4	5.1x5½	41.5	3	¼	T	C	T	Fo	Rayf	Eism	.....	L	Selec	4	Spic	C	Dead	102	Per	36x6	40x6†	Ross	Simp	.....
Hewitt-Ludlow 6-Ton	4000	3300	Buda	4	4¼x5½	28.9	.....	.....	.....	.....	T	Fo	Strm	Bosch	.....	B	.....	...	Spic	C	.....	.....	.....	36x4	36x4†	Lav	.....	.....
Hood	2900	1300	Own	4	3¾x3¾	22.5	3	¼	T	T	C	Sp	Holl	.....	.....	D	Plan	2	Own	C	Own	60	Lah	20x3½	20x5	Own	.....	65
Jumbo D	4450	2700	Buda	4	4¼x5½	28.9	3	¼	L	C	GO	Fo	Zen	Eism	.....	F	Full	3	Arv	I	Cl	152	Det	36x4	36x7	Jac	Dup	60
Knox 35	8500	5500	Own	4	5 x5½	40	4	¼	O	C	Fed	Fo	Zen	Mag	G&D	D	Selec	3	.....	C	Timk	108	.....	36x4	38x6†	Ross	.....	.....
Knox 36 3-Ton	10000	6000	Own	4	5 x5½	40	4	¼	O	C	Fed	Fo	Zen	Mag	G&D	D	Selec	3	.....	C	Timk	108	.....	36x4	38x6†	Ross	.....	.....
Koehler CT	2950	1950	H-Sp	4	3½x5	19.6	3	✱	R	C	T	FS	Zen	Eism	.....	D	MM	3	Spic	I	Torb	106	.....	34x3½	34x5	Own	Simp	.....
Koehler MT	5000	3050	Her	4	4 x5½	25.6	4	¼	R	C	T	P	Zen	Eism	.....	D	B-Li	4	Spic	W	Timk	106	.....	36x4	36x7	Lav	Simp	.....
Kuhn	9000	5000	Wis	4	4¼x5½	28.9	3	✱	T	C	H	Sp	Rayf	Bosch	.....	C	Selec	4	.....	B	Own	138	.....	36x7	36x7	.....	.....	55
Lapeer (3-Ton)	3050	2000	Wau	4	3½x5¼	19.6	3	¼	L	P	.....	FS	.....	Mag	.....	D	Selec	3	.....	I	Torb	88	.....	34x3½	34x5	Ross	.....	.....
Lapeer (5-Ton)	3400	2700	Wau	4	4 x5¾	25.6	.....	.....	L	P	.....	FS	.....	Mag	.....	D	Selec	3	.....	I	Torb	88	.....	34x3½	34x3½†	Ross	.....	.....
Lombard	8000	....	Spec	6	5½x6¾	72.7	.....	.....	.....	C	Spec	Fo	Sheb	.....	Spec	D	Spec	...	.....	W	.....	.....	.....	.....	.....	Spec	.....	90
Mack AB (5-Ton)	4900	3100	Own	4	4 x5	25.6	3	....	L	C	H	FS	Strm	Dix	.....	D	Selec	4	.....	C	Dead	120	.....	36x4	36x4†	.....	Own	47
Mack AC (7-Ton)	7670	4600	Own	4	5 x6	40	2	....	L	C	H	FS	Strm	Dix	.....	D	Selec	3	.....	C	Dead	119	.....	36x5	40x5†	.....	Own	45
Mack AC (11-Ton)	8250	5250	Own	4	5 x6	40	2	....	L	C	H	FS	Strm	Dix	.....	D	Selec	3	.....	C	Dead	119	.....	36x7	40x7†	.....	Own	50
Mack AC (15-Ton)	8650	5500	Own	4	5 x6	40	2	....	L	C	H	FS	Strm	Dix	.....	D	Selec	3	.....	C	Dead	119	.....	36x7	40x7†	.....	Own	50
Rennoc 8-Ton	5050	2850	Buda	4	4½x5½	27.2	3	¼	L	C	T	Fo	Strm	Spld	.....	D	Warn	4	Hart	W	Wis	116	Row	36x5	36x7	Lav	Pier	60
Walter 5-Ton "B"	8000	5000	Own	4	4½x6	30.6	3	¼	L	P	T	Fo	Strm	Eism	.....	Own	Own	4	Own	I	.....	156	S-El	36x6	40x6	.....	Own	60
Watson	6500	4050	Cont	4	4½x5½	32.4	3	✱	L	C	Jam	FS	Strm	Bosch	.....	L	B-Li	4	Spic	W	Timk	80	Shel	34x4	36x5†	Gem	Pier	37

Electric Commercial Cars

E. C. M. Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent Weight on Rear Wheels
Ward WS	750	1400	.....	12	Edis	45	West	West	4	B	Timk	Shel	32x2½	32x3	Own	88	60
C-T 1	1000	1800	1750	14	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3	36x3	W	90	60
Walker M	1000	2300	.....	15	Opt	60	West	West	5	O	Own	Math	34x3	36x3½	Ross	93	66
Atlantic 1C	2000	2770	.....	12	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x4	Ross	103	65
Ward WA	1250	2730	.....	12	Edis	47	G-E	G-E	4	W	Shel	Shel	32x3	34x3½	Own	90	60
C-T 2	2000	2500	2500	13	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3½	36x4	W	100	60
Walker K	2000	2500	.....	14	Opt	60	West	West	5	O	Own	Math	34x3½	36x4	Ross	96	66
Ward WB	2000	3250	.....	10	Edis	43	G-E	G-E	4	W	Shel	Shel	32x3½	36x4	Own	102	60
Atlantic 2C	4000	3590	.....	11	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x3†	Ross	115	65
C-T 3	4000	3500	3650	11	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x4	36x4†	W	116	60
Walker L	4000	3700	.....	13	Opt	60	West	West	5	O	Own	Math	38x4	38x6	Ross	112	66
Ward WD	4000	4500	.....	8.5	Edis	35	G-E	G-E	4	W	Shel	Shel	36x4	38x7	Own	114	60
Atlantic 3C	7000	5220	.....	10	Opt	.....	G-E	G-E	5	C	Timk	.....	36x5	40x4†	Ross	135	65
C-T 4	7000	5000	4595	10	Opt	50	G-E	Own	4	I	Dead	Shel	36x3½†	36x4†	W	122	55
Ward WF	7000	6600	.....	7	Edis	30	G-E	G-E	4	W	Shel	Shel	36x5	36x8	Own	132	60
Atlantic 5C	10000	6230	.....	9	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x5†	Ross	144	65
Couple Gear	10000	9000	5800	10	Phil	30	Own	Own	5	B	Own	Tut	36x5†	36x5†	Own	96	55
Couple Gear	14000	10000	4800	7	Phil	30	Own	Own	5	B	Timk	Tut	36x5†	36x5†	Own	96	75
C-T 5	10000	6000	4150	8	Opt	50	G-E	Own	4	I	Dead	Shel	36x4	36x5†	W	132	55
Walker P	7000	5300	.....	11	Opt	50	West	West	5	O	Own	Math	36x5	38x5†	Ross	131	66
Walker N	10000	6300	.....	10	Opt	50	West	West	5	O	Own	Math	36x6	38x6†	Ross	141	66
Ward WH	10000	8375	.....	6	Edis	26	G-E	G-E	4	W	Shel	Shel	36x7	40x10	Own	144	60
Couple Gear	14000	12000	5400	7	Phil	30	Own	Own	5	B	Timk	Tut	36x5	38x7	Own	194	75
Atlantic 6C	13000	6940	.....	8	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x6†	Ross	156	65
Couple Gear	14000	10000	6500	10	Phil	30	Own	Own	5	B	Own	Tut	36x5†	36x5†	Own	96	55

UNIVERSITY OF

Manufacturers Whose Models Are Included in Specifications on Preceding Pages

Acason—Acason Motor Truck Co., Detroit, Mich.
Ace—American Motor Truck Co., Newark, Ohio.
Acme—Acme Motor Truck Co., Cadillac, Mich.
All-American—All-American Truck Co., Chicago, Ill.
Apex—Hamilton Motors Co., Grand Haven, Mich.
Armieder—O. Armieder Co., Cincinnati, Ohio.
Atlantic—Atlantic Electric Vehicle Co., Newark, N. J.
Atlas—Martin Truck & Body Corp., York, Pa.
Atterbury—Atterbury Motor Car Co., Buffalo, N. Y.
Autocar—Autocar Co., Ardmore, Pa.
Available—Available Truck Co., Chicago, Ill.

Beck-Hawkeye—Beck-Hawkeye Motor Truck Wks., Cedar Rapids, Iowa.
Bessemer—Bessemer Motor Truck Co., Grove City, Pa.
Bethlehem—Bethlehem Motors Corp., Allentown, Pa.
Betz—Betz Motor Truck Co., Hammond, Ind.
Brinton—Brinton Motor Truck Co., Philadelphia, Pa.
Briscoe—Briscoe Motor Corp., Jackson, Mich.
Brockway—Brockway Motor Truck Co., Cortland, N. Y.

C. T.—Commercial Truck Co. of America, Philadelphia, Pa.
Chevrolet—Chevrolet Motor Co. of Mich., Flint, Mich.
Clydesdale—Clyde Cars Co., Clyde, Ohio.
Collier—Collier Motor Truck Co., Bellevue, Ohio.
Columbia—Columbia Motor Truck and Trailer Co., Pontiac, Mich.
Comet—Comet Automobile Co., 156 S. Water St., Decatur, Ill.
Commerce—Commerce Motor Car Co., Detroit, Mich.
Concord—Abbot-Downing Truck & Body Co., Concord, N. H.
Conestoga—Conestoga Motor Truck Co., Lancaster, Pa.
Corbitt—Corbitt Motor Truck Co., Henderson, N. C.
Corliss—Corliss Motor Truck Co., Corliss, Wis.
Couple Gear—Couple Gear Freight Wheel Co., Grand Rapids, Mich.

Dart—Dart Truck & Tractor Corp., Waterloo, Ia.
Day-Elder—Day-Elder Motors Corp., Newark, N. J.
Dearborn—Dearborn Truck Co., Chicago, Ill.
Defiance—Turnbull Motor Truck & Wagon Co., Defiance, Ohio.
DeKalb—DeKalb Wagon Co., DeKalb, Ill.
Denby—Denby Motor Truck Co., Detroit, Mich.
Diamond T—Diamond T Motor Car Co., Chicago, Ill.
Diehl—Diehl Motor Truck Works, Philadelphia, Pa.
Dispatch—Dispatch Motor Car Co., Minneapolis, Minn.
Doane—Doane Motor Truck Co., San Francisco, Cal.
Dodge—Dodge Bros., Detroit, Mich.
Dorris—Dorris Motor Car Co., St. Louis, Mo.
Douglas—Douglas Motors Corp., Omaha, Nebr.
Duplex—Duplex Truck Co., Lansing, Mich.

Ellsworth—Mills-Ellsworth Co., Keokuk, Ia.
Erie—Erie Motor Truck Mfg. Co., Erie, Pa.

F. W. D.—Four Wheel Drive Auto Co., Clintonville, Wis.
Fageol—Fageol Motors Co., Oakland, Cal.
Famous—Famous Trucks, Inc., St. Joseph, Mich.
Fargo—Fargo Motor Truck Co., Chicago, Ill.
Federal—Federal Motor Truck Co., Detroit, Mich.
Ford—Ford Motor Co., Highland Park, Mich.
Forschler—Forschler Motor Truck Mfg. Co., New Orleans, La.
Fulton—Fulton Motor Truck Co., New York, N. Y.

G. M. C.—General Motors Truck Co., Pontiac, Mich.
Gabriel—Gabriel Motor Truck Co., Cleveland, Ohio.
Garford—Garford Motor Truck Co., Lima, Ohio.
Gary—Gary Motor Truck Co., Gary, Ind.
Gersix—Gersix Mfg. Co., Seattle, Wash.
Giant—Giant Truck Corp., Chicago Heights, Ill.
Gramm-Bernstein—Gramm-Bernstein Motor Truck Co., Lima, Ohio.
Grant—Grant Motor Car Corp., Truck Division, Cleveland, Ohio.

Hahn—Hahn Motor Truck & Wagon Co., Hamburg, Pa.
Hall—Lewis-Hall Iron Works, Detroit, Mich.
Harvey—Harvey Motor Truck Co., Harvey, Ill.
Hawkeye—Hawkeye Truck Co., Sioux City, Ia.
Hendrickson—Hendrickson Motor Truck Co., Chicago, Ill.
Hewitt-Ludlow—Ralston Iron Works, San Francisco, Cal.
Highway—Knight-Highway Motors Co., Chicago, Ill.
Higrade—Higrade Motors Co., Harbor Springs, Mich.
Hood—Hood Mfg. Co., Seattle, Wash.
Hoover—Hoover Wagon Co., York, Pa.
Huffman—Huffman Bros. Co., Elkhart, Ind.
Hurlburt—Hurlburt Motors, Inc., New York, N. Y.

Independent—Independent Motor Co., Youngstown, Ohio.
Independent—Independent Motor Truck Co., Inc., Davenport, Ia.
Indiana—Indiana Truck Corp., Marion, Ind.
International—International Harvester Co., Chicago, Ill.

Jones—Jones Motor Car Co., Wichita, Kans.
Jumbo—Nelson Motor Truck Co., Saginaw, Mich.

Kalamazoo—Kalamazoo Motor Corp., Kalamazoo, Mich.
Kankakee—Kankakee Automobile Co., Kankakee, Ill.
Keldon—House Cold Tire Setter Co., St. Louis, Mo.
Kelly-Springfield—Kelly-Springfield Motor Truck Co., Springfield, Ohio.
Kimball—Kimball Motor Truck Co., Los Angeles, Cal.
King Zeitler—King Zeitler Co., Chicago, Ill.
Kissel—Kissel Motor Car Co., Hartford, Wis.
Knox—Knox Motors Co., Springfield, Mass.
Koehler—H. J. Koehler Motors Corp., Newark, N. J.
Kuhn—Kuhn Tractor Truck Co., Seattle, Washington.

Lange—Lange Motor Truck Co., Pittsburgh, Pa.
Lapeer—Lapeer Tractor-Truck Co., Lapeer, Mich.
Larrabee-Deyo—Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.
Lombard—Lombard Auto Tractor Truck Corp., New York, N. Y.
Luverne—Luverne Automobile Co., Luverne, Minn.

Maccar—Maccar Truck Co., Scranton, Pa.
Mack—International Motor Co., New York, N. Y.
Manly—Manly Motors Co., Waukegan, Ill.
Master—Master Trucks, Inc., Chicago, Ill.
Maxwell—Maxwell Motor Co., Inc., Detroit, Mich.
Menominee—Menominee Motor Truck Co., Menominee, Mich.
Moore—Moore Motor Vehicle Co., Danville, Ill.
Moreland—Moreland Motor Truck Co., Los Angeles, Cal.
Muskegon—Muskegon Engine Co., Muskegon, Mich.
Myers—E. A. Myers Co., Pittsburgh, Pa.

Napoleon—Napoleon Motors Co., Traverse City, Mich.
Nash—Nash Motors Co., Kenosha, Wis.
Nelson-LeMoon—Nelson & Le Moon, Chicago, Ill.
Netco—New England Truck Co., Fitchburg, Mass.
Noble—Noble Motor Truck Co., Kendallville, Ind.
Northway—Northway Motors Co., Natick, Mass.
Northwestern—Starr Carriage Co., Seattle, Wash.
Norwalk—Norwalk Motor Car Co., Martinsburg, W. Va.

O. K.—Oklahoma Auto Mfg. Co., North Muskogee, Okla.
Ogden—Ogden Motor & Supply Co., Chicago, Ill.
Old Hickory—Kentucky Wagon Mfg. Co., Louisville, Ky.
Old Reliable—Old Reliable Motor Truck Co., Chicago, Ill.
Oldsmobile—Olds Motor Works, Lansing, Mich.
Oneida—Oneida Motor Truck Co., Green Bay, Wis.
Oshkosh—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.
Overland—Willys-Overland Co., Inc., Toledo, Ohio.

Packard—Packard Motor Car Co., Detroit, Mich.
Paige—Paige-Detroit Motor Car Co., Detroit, Mich.
Parker—Parker Motor Truck Co., Milwaukee, Wis.
Patriot—Hebb Motors Co., Lincoln, Nebr.
Piedmont—Piedmont Motor Car Co., Inc., Lynchburg, Va.
Pierce-Arrow—Pierce-Arrow Motor Car Co., Buffalo, N. Y.
Pittsburgher—Pittsburgh Truck Mfg. Co., Pittsburgh, Pa.
Pony—Minnesota Machinery & Foundry Co., Minneapolis, Minn.

Rainier—Rainier Motor Corp., Flushing, L. I., N. Y.
Reliance—Reliance Motor Truck Co., Appleton, Wis.
Rennoc—Rennoc-Leslie Motor Co., Philadelphia, Pa.
Reo—Reo Motor Car Co., Lansing, Mich.
Republic—Republic Motor Truck Co., Inc., Alma, Mich.
Riker—Locomobile Co. of America, Bridgeport, Conn.
Rock Falls—Rock Falls Mfg. Co., Sterling, Ill.
Rowe—Rowe Motor Mfg. Co., Lancaster, Pa.
Royal—Royal Motor Truck of N. Y., New York, N. Y.

Sandow—Sandow Motor Truck Co., Chicago, Ill.
Sanford—Sanford Motor Truck Co., Syracuse, N. Y.
Schacht—G. A. Schacht Motor Truck Co., Cincinnati, Ohio.
Schwartz—Schwartz Motor Truck Co., Reading, Pa.
Selden—Selden Truck Corp., Rochester, N. Y.
Service—Service Motor Truck Co., Wabash, Ind.
Shaw—Walden W. Shaw Livery Co., Chicago, Ill.
Signal—Signal Motor Truck Co., Detroit, Mich.
Standard—Standard Motor Truck Co., Detroit, Mich.
Sterling—Sterling Motor Truck Co., Milwaukee, Wis.
Stewart—Stewart Motor Corp., Buffalo, N. Y.
Stoughton—Stoughton Wagon Co., Stoughton, Wis.
Sullivan—Sullivan Motor Truck Corp., Rochester, N. Y.
Superior—Superior Motor Truck Co., Atlanta, Ga.

Texan—Texas Motor Car Asso., Fort Worth, Tex.
Tiffin—Tiffin Wagon Co., Tiffin, Ohio.
Titan—Titan Truck Co., Milwaukee, Wis.
Tower—Tower Motor Truck Co., Greenville, Mich.
Traffic—Traffic Motor Truck Corp., St. Louis, Mo.
Transport—Transport Truck Co., Mt. Pleasant, Mich.
Triangle—Triangle Motor Truck Co., St. Johns, Mich.
Triumph—Triumph Truck & Tractor Co., Kansas City, Mo.
Twin City—Twin City Four Wheel Drive Co., Inc., St. Paul, Minn.

Union—Union Motor Truck Co., Bay City, Mich.
United—United Motors Co., Grand Rapids, Mich.
U. S.—United States Motor Truck Co., Cincinnati, Ohio.

Velie—Velie Motors Corp., Moline, Ill.
Victor—Victor Motor Truck & Trailer Co., Chicago, Ill.
Vim—Vim Motor Truck Co., Philadelphia, Pa.

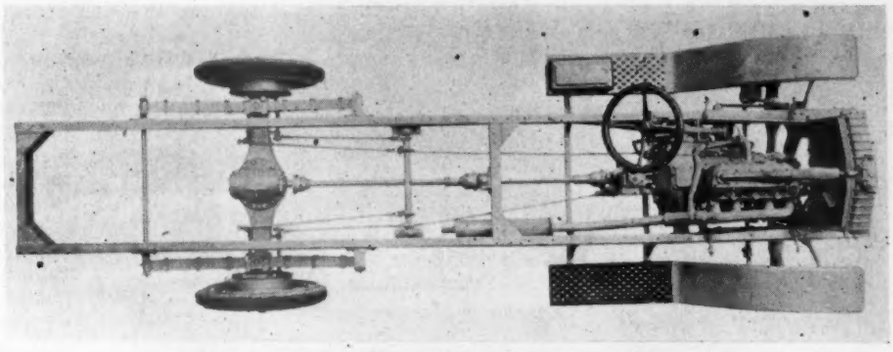
Walker—Walker Vehicle Co., Chicago, Ill.
Walter—Walter Motor Truck Co., New York, N. Y.
Ward—Ward Motor Vehicle Co., Mt. Vernon, N. Y.
Ward La France—Ward La France Truck Co., Inc., Elmira, N. Y.
Watson—Watson Wagon Co., Canastota, N. Y.
White—White Co., Cleveland, Ohio.
White Hickory—White Hickory Wagon Mfg. Co., Atlanta, Ga.
Wichita—Wichita Falls Motor Co., Wichita Falls, Tex.
Wilcox—H. E. Wilcox Motor Co., Minneapolis, Minn.
Wilson—J. C. Wilson Co., Detroit, Mich.
Winther—Winther Motor Truck Co., Kenosha, Wis.
Witt Will—Witt-Will Co., Inc., Washington, D. C.
Wolverine—American Commercial Car Co., Detroit, Mich.

NEW COMMERCIAL CARS

New One-Ton Standard Truck Embodies Many Worthy Features

THE Standard Motor Truck Co., Warren, Ohio, announce that their new model 56 one-ton Standard is now in production.

The Model 56, like the two, three and one-half and five-ton models, is constructed entirely of standard units. This feature of standardization is extremely valuable, in that should an accident occur, new parts can readily be obtained from the various sources of supply. Built in the same thorough manner and constructed of only the best units and materials obtainable, this sturdy Standard assures dependable service at all times.



Plan View. Tire Equipment Optional. Wheelbase 134-Inches

The motor is the Continental Red Seal four-cylinder "L"-head type, with a bore 3¾ in. and a stroke of 5 in. The water jacket head is cast separately and is easily removable. It is suspended from three points. The crankcase and oil pan are separate and as all bearings are carried in the crankcase they are easily accessible by removing the oil pan. Special attention has been given to the valve mechanism. The inlet and exhaust valves are interchangeable. They are accurately ground to size and the stems are hardened to prevent wear. The valves are covered with metal plates, which feature, in addition to excluding dirt and grime, makes for a quieter running motor. A centrifugal pump of ample capacity circulates water through cooling system.

All crank cam and connecting rod bearings are made of the highest grade of nickel babbitt. Connecting rod and crankshaft bearings are backed with bronze and are within easy reach when the oil pan is removed. The oiling system is automatic, being a combination of the force feed and splash type. The cam shaft is a single drop forging supported in long white bronze bearings and is lubricated by the oil that collects in the oil pockets, which are cast in the crankcase for this purpose. It is easily removable. The crankshaft, which is made of special crankshaft steel, gives a tensile strength of 90,000 lb. per sq. in.

The radiator is of the vertical spiral tube construction made with cast tanks of large capacity. In case of accident when one or more tubes have been damaged, the core may be easily removed by simply removing the top tank. The defective tubes can be taken out and if necessary the tube holes in tanks plugged up until new tubes are secured. This feature has been proven a time and money saver when accidents have occurred to the radiator miles away from any service station.

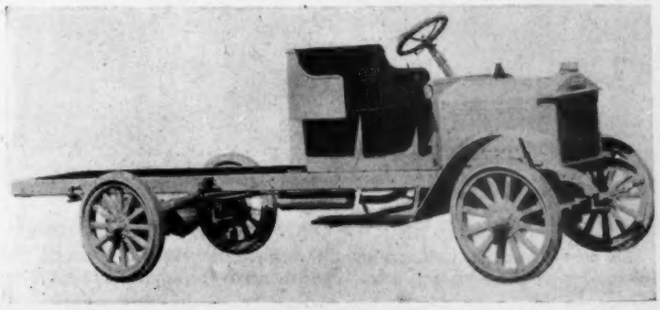
A Stromberg carburetor with hot air stove equipment is used and ignition is obtained by the Eisemann high tension, fixed spark waterproof magneto.

The transmission is of the selective-sliding gear type, three speeds forward and one reverse, unit power. Both the transmission and the clutch are Brown-Lipe. Adjustment of the multiple disk clutch is easily made by four lock screws. Spicer front and rear propeller shafts, and three-piece Universal joint assemblies, supported in the center with an S. K. F. ball bearing, are used. This is said to do away with the whipping caused by a one-piece propeller shaft. Timken-Detroit axles and bearings are used throughout. The front axle is an "I"-beam section and the rear is of the semi-floating type; worm drive.

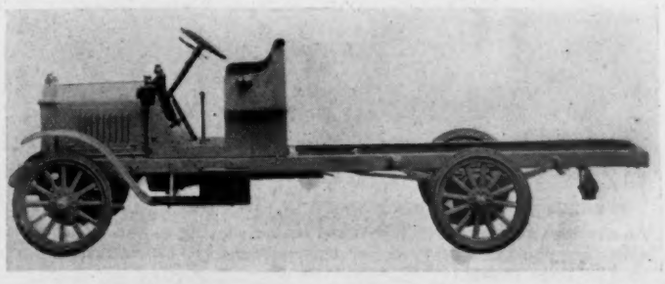
Duplex expanding brakes 15 in. x 3 in. on rear wheels are used. Braker rocker shafts are made of solid steel bars and tubular shafts with swiveled bronze bushings mounted in bracket to frame side members designed to give perfect alignment. The brake levers are keyed and clamped to shaft. Brake rods are ½ in. diam. with ½ in. S. A. E. Clevis at each end. Perfection springs are used, and the frame is a heavy pressed steel 5-in. section.

The regular wheel equipment is the artillery type wood wheel: front 34 in. x 3½ in.; rear 34 A x 4 in. single solid. Pneumatic tires are optional at the additional difference in cost. The wheelbase is 134 in.

The price is $1900 f.o.b. Detroit, for chassis with regular equipment, consisting of horn, seat with cushion, and lazy-back, front fenders, two side and one rear oil lamp, tool box with jack and tool kit.



Note General Sturdiness Throughout Construction



Equipped With Horn, Three Lamps, Tool Box, Jack and Kit

The New Five-Ton Master Embraces the Good Features of Earlier Models

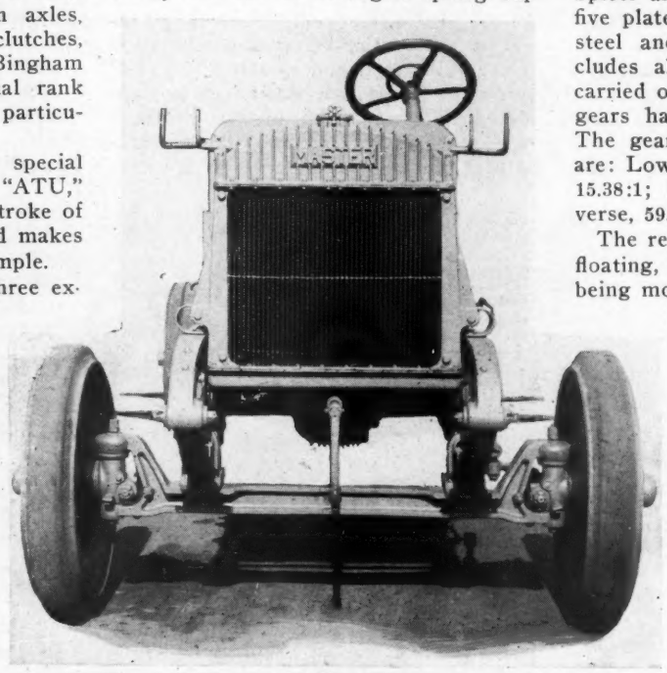
A NEW five-ton chassis that has recently made its debut to the trade rounds out the large Master line to five capacities and eleven models. Its construction follows the sturdy, rugged design common to the earlier and smaller models, differing only in that it is the giant of the line. Recognized standard units such as Buda engines, Timken axles, Brown-Lipe transmissions and clutches, Ross steering gears, Parish & Bingham frames and other units of equal rank have been incorporated in this particular chassis.

The new five-ton carries a special heavy duty Buda engine, model "ATU," having a bore of 4¾ in. and a stroke of 6½ in. Removable cylinder head makes valve grinding comparatively simple.

The crankshaft is carried in three extra large bronze-shell, babbitt-lined bearings, the front measuring 2¼ x 4⅛ in.; center, 2½ x 3⅞ in., and the rear, 2⅝ x 4¼ in. Connecting rod bearings are I-beam chrome-vanadium steel. Camshaft bearings are die-cast babbitt. The entire engine is especially designed for continuous operation on low grades of fuel under heavy load.

Lubrication is by positive force feed, a gear pump forcing the oil, under heavy pressure, to the main bearings and thence through a passage drilled in the crankshaft to the connecting rod bearings. An own make, 1½-in. carburetor, fitted with a Pierce governor and an air adjustment on dash, is used. Ignition is furnished by a "GA-4" Eisemann magneto provided with automatic advance.

The radiator, which is also of own make, is of the tubular type, the core being removable and is supported on a frame of cast iron, which in conjunction with cast iron tanks makes for strength and rigidity. Flexibility, which is secured by the use of strong C-spring supports, protects the cooling section from shocks and strains. Circulation is effected by a centrifugal pump. Extra large water spaces around cylinders and valves is said to insure adequate cooling.



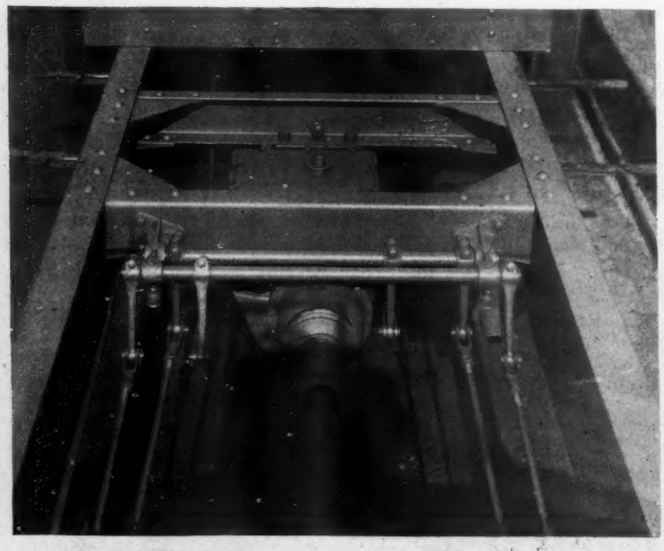
Front View, Showing New Type of Front Axle Without Center Drop
Notice sturdy knuckles and steering connections. The tubular type of radiator, which is of own design and new to the line this year, is carried on springs to relieve torsional strains.

Power is transmitted to the worm gear axle through a Brown-Lipe dry plate clutch, a Brown-Lipe four-speed transmission, which is carried on a three-point suspension amidships, and a large tubular propeller shaft fitted with two Spicer and two Detroit universals. The five plate clutch operates Raybestos-to-steel and the transmission, which includes alloy steel shafts and gears, is carried on Timken roller bearings. The gears have a 1-in. face and 5-7 pitch. The gear ratios for the various speeds are: Low, 49.61:1; second, 29.11:1; third, 15.38:1; high or final, 10.25:1, and reverse, 59.55:1.

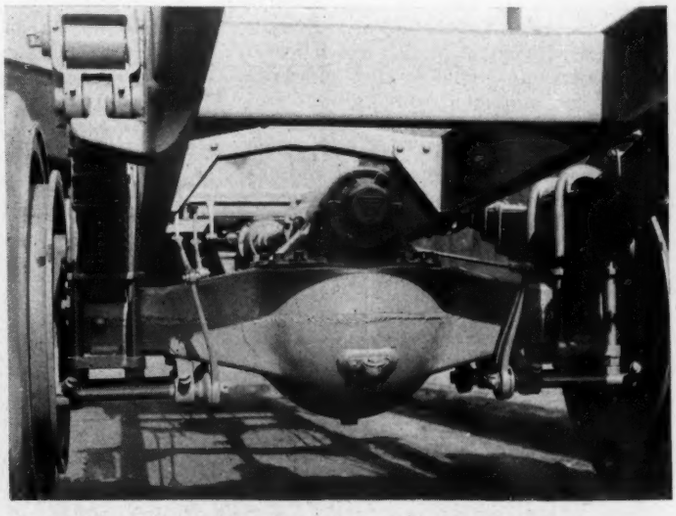
The rear axle is a Timken worm, full-floating, the worm gear and differential being mounted as a unit. Timken roller bearings are fitted throughout and the housing is one-piece, pressed steel with nickel and steel reinforcing tubes.

The front axle also is Timken, being a straight I-beam with no center drop. The beam is 2¼ in. wide with ½-in. webs. The spindles are 2½ in. in diam. Timken roller bearings are fitted to both hubs and steering knuckle heads. All wearing parts are extra large and fitted with hardened and ground steel bushings.

Insurance against skid chains interfering with brakes is provided by placing both brakes inside the 24-in. diam. drum. Both brakes are cam-actuated, internal expanding. The steering gear



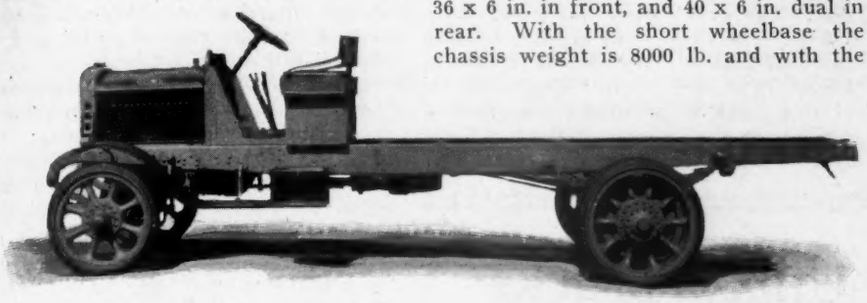
Amidship Transmission Mounting and Frame Construction
An airplane view of the Five-Ton Master chassis, showing transmission mounted amidships, also extra heavy Spicer universals and the rocker shaft which is used for brake control.



Rear Axle Used in the Five-Ton Master is Built Over-Size
This view shows the sturdiness found throughout the chassis. Note the size of housing for the worm and gear. Special means for adjusting brake levers also is shown.

is a Ross, semi-reversible, worm and solid nut gear. Wearing surfaces are especially large and double ball thrust bearings are provided.

One of the first things in this chassis to attract the attention of the observer is the exceptionally sturdy frame. The depth of side-rail which is 10 in., and



Sectional View of the Five-Ton Master Chassis, Calling Particular Attention to the Depth of Frame, Which is Ten Inches

manufactured by Parish & Bingham, is the heaviest ever put into a truck of this size. The channel section stock measures ¼-in. in thickness and the flange is 3½ in. wide. With the standard wheelbase 168 in. is provided back of the driver's seat, while the long wheelbase gives 192 in.

Springs are of the locomotive banded type, of Silico-manganese steel, 46 x 3 in. front and 60 x 4 in. rear. There are thirteen leaves in the front springs and eighteen in the rear. All springs are bronze-bushed. A heavy top rebound leaf, which is provided, co-ordinating with the Hotchkiss drive, standard in all Master models, is said to give an almost identical construction to that used in the U. S. Army trucks.

Wheels are steel and tires are single 36 x 6 in. in front, and 40 x 6 in. dual in rear. With the short wheelbase the chassis weight is 8000 lb. and with the long, 8200 lb. Each chassis has as equipment, driver's seat with cushions, three lamps, folding crank, tool box, tool kit and siren whistle. The standard color is gray lead, two coats being applied, but color painting can be had at a slight extra cost.

With the standard wheelbase of 170 in. the price is $4890; the extra long wheelbase of 194 in. adds $100 to this price.

This truck is manufactured by the Master Trucks, Inc., Chicago, Ill.

New Parker Three and a Half Ton Truck Replete With New Features

IN view of the demand for heavy duty, high speed trucks, suitable for city and country work alike, the Parker Motor Truck Co., Milwaukee, Wis., is now producing a model with a standard track. Although this truck is rated at 3½-ton it has been designed throughout for a pay-load of 4½ tons on average roads, without infringing upon the advocated non-overloading habit. But where conditions are extremely severe it is to be used only as a 3½-ton truck.

The chassis complete weighs 6800 lb. and is arranged for the use of pneumatic tires. On solid tires a road speed of 16 m.p.h. is obtained at 1030 r.p.m. of the engine. With cushion wheels 19 m.p.h. is permissible and when using pneumatic equipment 25 m.p.h. is a safe and usable speed.

Careful consideration has been given to the brakes, which are designed to promptly stop the truck at the high speed at which it operates. The standard wheel track has been decided upon because of the great benefit derived when running on other than paved roads, by being able to run in the standard wagon track instead of breaking through the soft part of the road.

A 4-cylinder, detachable head, Wisconsin engine with 4½ in. bore and 6 in. stroke, is supported on a three-point suspension, the forward support being a trunnion mounted above a cross member. The crankshaft revolves in four main bearings and the entire motor is pressure oiled through a drilled crankshaft.

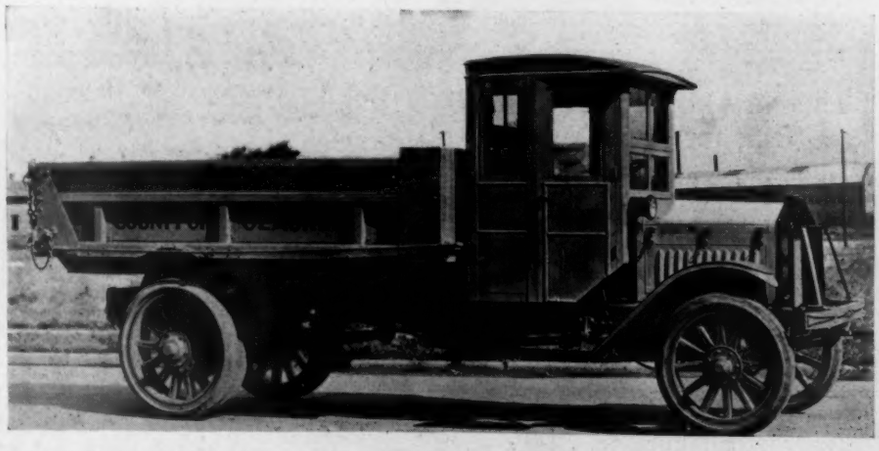
The crankcase is made of aluminum. The Brown-Lipe, multiple disc, No. 50 is used. The longer foot pedals and gear change control have been mounted on separate tube frame members and in no way interfere with the removable clutch, motor or transmission.

Drive is through a double fabric universal connection between the clutch and a Warner 4-speed, 5-ton size, transmission, which is mounted amidship on cast steel cross members of special design to the rear joint, which is of the double universal type, 2½ in. in diam., attaching directly to the new Parker worm-drive rear axle. The rear axle is a 3-piece electric cast steel and heat treated. Worm and wheel are of Timken make and the axle is equipped with Timken roller bearings throughout. A rear transmission bar supports the service brake, which is mounted immediately back of the transmission. This form of attachment is to prevent any disalignment between the service brake, frame and the transmision itself.

Front tires are 36 x 5 and the rear 40 x 10 single or 40 x 5 x 10 dual. Wood or steel wheels are optional. The front axle is a heavy, I-section, straight bed with Timken bearings throughout and the steering is effected by the latest type of Ross fore and aft steering gear.

The frame is of pressed steel construction, 7 inches. The stock is ¼ in. thick and the flanges are 3 in. wide. Throughout the entire frame, heat treated nickel steel has been liberally used and in such places where steel castings have been used, they are annealed and heat treated. Because of the fact that the engine has a high gear ratio of 7.8 on 40-in. rear wheels, it is possible to obtain high road speeds at nominal engine speed.

The following detail specifications will bring out many of the other features. Lubrication includes an oil pump located in the sump and is capable of holding ten quarts of oil. A gage located on the dash indicates whether pump is operating accurately or not at all. The cooling system consists of a centrifugal pump which circulates water through the water jackets of the engine and back to the radiator. The radiator, which is of the built-up type with vertical tube core, is assisted by an 18-in. fan mounted on large ball bearings and driven by a 2-in. flat belt. A Stromberg carburetor with a 1½-in. opening equipped with a hot air attachment is used. The choker is operated from the dash. A Monarch gov-



Model "J9" Parker Three and a Half Ton Truck, Equipped With a "D" Type Cab

ernor which limits the power speed to 1050 r.p.m. is bolted between the carburetor and inlet manifold. Lighting is through the Westinghouse third-brush generator, obtaining its power from a 127 ampere-hour Willard storage battery. The starter is also of Westinghouse make. The gear reduction is as follows: First speed, 38.9:1; second speed, 24.6:1; third, 13.9:1; fourth, 7.8:1, and reverse speed, 45.2:1. The propeller shaft is 1¾ in. diam. between clutch and transmission with thermoid joint; 2½ in. shaft between transmission and rear axle, with latest type Kinsler-Bennett joint. The emergency brakes are 16 in. in diam. by 2½ in. wide; the external contracting service brakes mounted back of the transmission are 10 in. in diam. and 5 in. wide. The springs are unusually long, semi-elliptic, being 44 in. long and 3 in. wide with 7 leaves in front and 60 in. long by 3 in. wide with 16 leaves in the rear. The wheelbase varies from 160 to 180 in. The tread is 58 in. The loading space in back of driver's seat is 139 in., height 32 in. and width of frame 33 in. If this truck is pneumatic equipped it requires 38 x 7 in. tires in the front and 44 x 10 in. in the rear.

Samson Farm Utility Trucks

This new three-quarter Samson truck together with another model of one-and-one-quarter-ton capacity, designed particularly for farmer utilities, will shortly be offered to the trade by the Samson Tractor Co., Janesville, Wis. The driver seat, which is a part of a typical farm box-body, is placed well up in the front of truck which allows two additional ft. for body space. These trucks are pneumatic tire equipped, a necessary requisite for easy negotiation on farms and fields. Extra extension rims for both front and rear wheels and demountable cleat bands for the rear wheels can be obtained as extra equipment if the truck is to be used in muddy fields or on rough roads.

The price for a truck of the three-quarter-ton and one-and-one-quarter-ton models which include the chassis, double box and fenders, extension rims for both front and rear wheels, together with demountable cleat bands for rear wheels is $660 and $1070, respectively. For city use where chassis only may be desired, the price is $550 and $950, respectively.

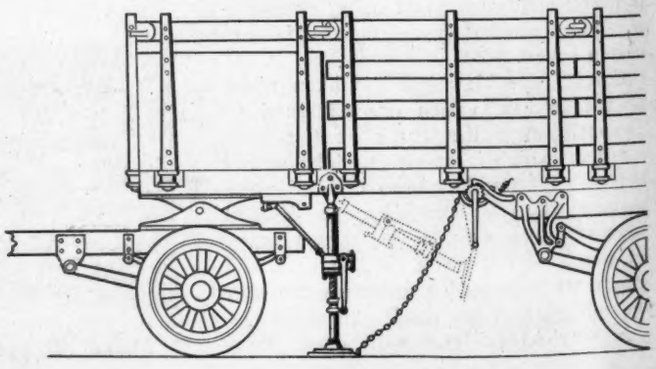
Samson One and a Quarter Ton Truck Hauling on the Roads. Note the Extension Rims on the Wheels, Which Are Designed for Soft Ground Work

The New Improved Fruehauf Jack for Semi-Trailer

In many lines of industry the effectiveness of semi-trailers is materially increased by using two or three trailers in rotation with one tractor. Obviously, some support is required when the trailer is disconnected from the tractor for loading or unloading.

The Fruehauf Trailer Company, 1571-1577 Gratiot Ave., Detroit, Mich., is providing for the equipment of the semi-trailer patented twin jacks, shown in the accompanying illustration. They serve as a device for lifting the trailer to connect with or disconnect from the road tractor and also as a suitable support on which the trailer may rest when not attached to the tractor. This device may be attached on any platform model. As seen by the illustration they are securely attached to the frames and are entirely out of the way when not in use. By releasing a ratchet they will immediately drop and automatically lock in place. When the trailer is in motion they are raised by a crank operated from the side. Provision has been made to insure the trailer from tipping while loading and unloading. The tendency to give on the side is also said to be eliminated by use of a rigid cross number.

They are of the worm type, of low gear, and can be operated by one man by a crank on one side of the trailer. If the jacks are applied to trailers hauling heavier loads than six tons, two cranks are furnished so that two men may raise them, one working at both sides. Provisions have been made whereby either jack may be independently raised or lowered in case the ground is not level.



The Fruehauf Jack Can be Secured to the Platform When Not in Use.

Pneumatic Tired Truck Wheels

To meet the requirements of those who have solid tired trucks and wish to change to Giant pneumatic tire equipment without the delay and trouble of having their old wheels changed over, the Luverne Automobile Co., of Luverne, Minn., has placed on the market a complete line of pneumatic tired truck wheels.

These wheels are furnished in various sizes to fit the different makes of motor trucks and are equipped with Firestone demountable rims and any make of tire desired in sizes ranging from 32 x 4½ in. to 40 x 8 in.

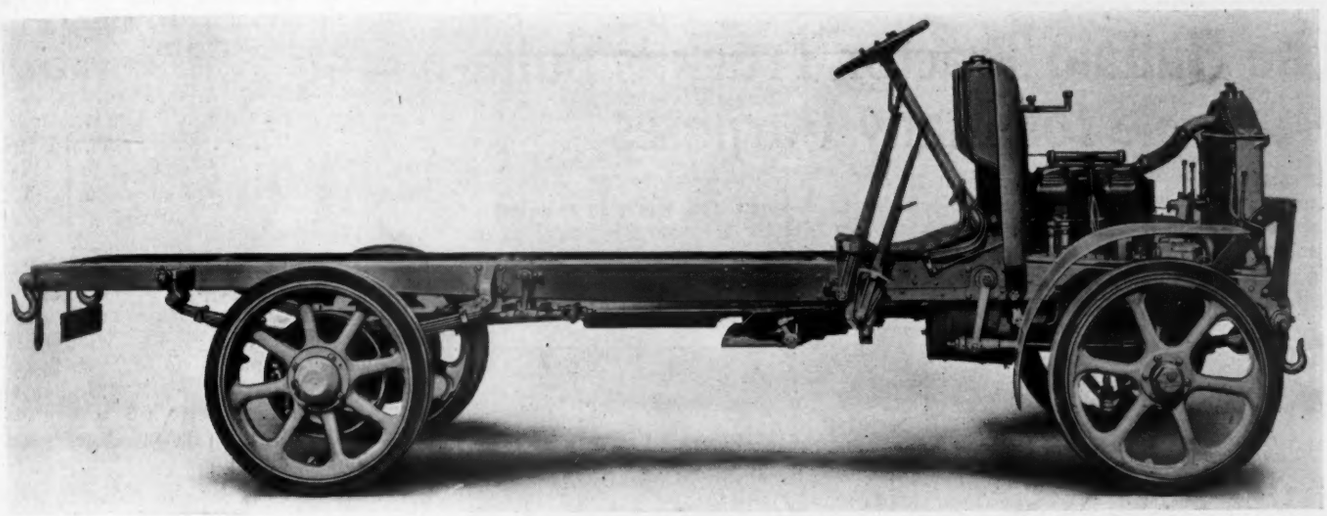
These wheels are all wood artillery wheels of the standard type. They are furnished without hubs, but with suitable bore and dimensions to fit customer's hubs.

Anyone who wishes to change his truck tire equipment to pneumatics can do so, the change taking but a few hours. This plan eliminates all necessity for laying up the truck, reduces the cost of making the change, makes a better job, and leaves the old wheels intact for further use should there be occasion to use them.

British Concern Incorporates the Features of Its Larger Models in a New Two-Ton Model

BRITISH factories have concentrated for four years on larger sized trucks, flooding the market indirectly through the government with hundreds of three and four-ton trucks. For this reason it is not surprising that several British makers are turning their immediate attention towards smaller sizes. A prominent British concern, D. Napier & Son, Ltd., London, emphasizes this point by starting production on their latest design, which is a two-ton model. It embodies all the latest influences and tendencies, correcting all the defects that were strikingly brought before the engineers during the past few years of gruelling war service. This new chassis is practically a miniature of the three and four-ton subsidy war type, and is designed to insure low maintenance and working costs. The chief aim of this company in the construction of its new product is low maintenance and working expense rather than low manufacturing costs. Substantial construction is another feature, for though the truck is officially rated as a two-tonner, it is fully capable of carrying an additional quarter of a ton, without a suggestion of overloading, although experience does not advocate the overloading habit; the maker maintains that a good margin is considered necessary to guard against such foolishness. The unladen weight of the chassis is 56 lb. under the two tons.

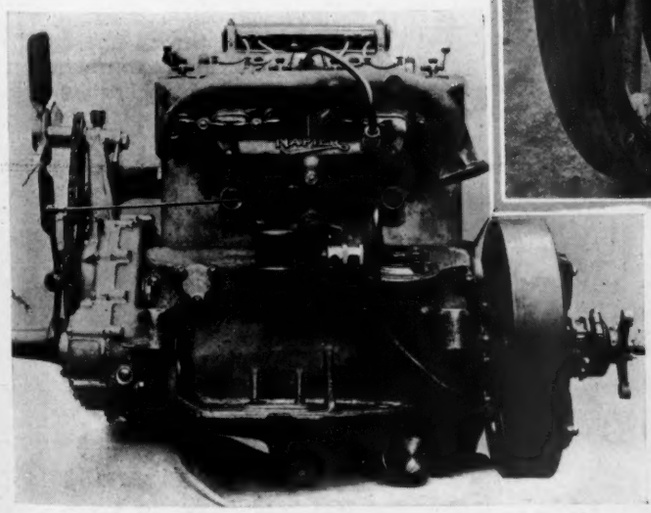
Apart from these generalities there is in the two-ton Napier but little out of the ordinary



Side View of Napier Two-Ton Chassis

It has a minimum clearance of 10½ inches. Weight of load and chassis is rated at 4¾ tons, carried on solid tires. The wheelbase is 126 inches

Left: View Shows Ample Lock of Front Wheels. Tow Hook is Shackled With the Spring on the Spring Hanger.



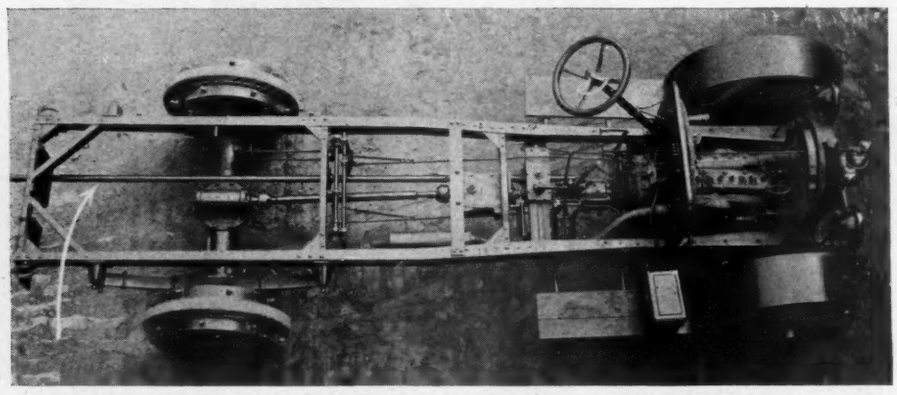
Above: Front View of the Carburetor Side of Napier Two-Ton Engine.

Right: The Arrangement of the Control is Simple. Note Two Front Pedals on Each Side of Column

run of sound truck practice. The ground clearance of 10½ in., minimum, is perhaps rather remarkable for a chassis of this size, but tor the rest, the truck is covered by the following specifications: Engine, 25-30 hp. with four cylinders arranged in pairs, having 3 11-16-in. bore and 5-in. stroke. This at 1000 r.p.m. gives speeds of 3.8, 7.25, 10.4 and 15 miles an hour, the last being direct to the worm drive. The body of the rear axle is formed from banjo-shaped forging and is very strong. From the dash to the end of the frame the space available for driver's seat and body is 13 ft. 5/8 in., while the overall width—over hub caps—is 6 ft. 5½ in. With maximum load the total weight of the truck works out to 4¾ tons. This is carried by 870 x 100 mm. tires, singles on the front, duals at the back. The wheelbase is 10 ft. 6 in., and the truck can turn in a circle of approximately 44 ft.

The Buffalo Tractor Truck is Suitable for Many Purposes

A new combination truck, tractor and portable power plant has been recently announced by the Buffalo Truck & Tractor Corp., Buffalo, N. Y. Its scope of utility extends to many lines of business, being especially adaptable for the work of road contractors, oil producers and farmers.



Plan of New Buffalo Tractor Truck. Arrow Calls Attention to Extended Power Take-Off Shaft Upon the End of Which is Attached Pulley

In order to give this truck the enormous power required for tractor work, a special gear ratio has been provided, enabling the truck to be geared down to the low speed of one mile in seven hours. In addition to this another tractor featuring auxiliary, designed to give the ordinary truck wheels traction in the field, is provided. It consists of two extensions, about three inches wide, on each side, but sufficiently inside the outer circumference of the standard truck wheel to escape contact with the paved roads. These extensions are equipped with lugs, which increase the traction of the truck to a still higher degree, thus enabling one to drive into the field, load up, and return on to the road with no difficulty or change of any kind.

It is also useful as a portable power plant, the take-off power being obtained from a pulley, which is attached to the end of a shaft which in turn extends from the transmission to and projecting beyond the rear of the chassis. This shaft is capable of developing 18 hp.

The capacity of the truck is 1½ tons and is electric lighted and started. It has a device for extra radiation when in use as a power plant. The power may be used when the truck is running or when idling. Locomotive power is obtained from a four-cylinder Lycoming Model K engine, having a 3½-in. bore and a 5-in. stroke and is of the L-head type. For truck purposes this truck can be made to run twenty miles an hour.

This truck may be obtained in any one of three types. The first type is a regular commercial chassis and lists at $1650; the second type, which includes the tractor wheel equipment, lists at $1750; and the third type, which consists of the portable power plant, tractor wheel equipment and chassis, lists at $2150.

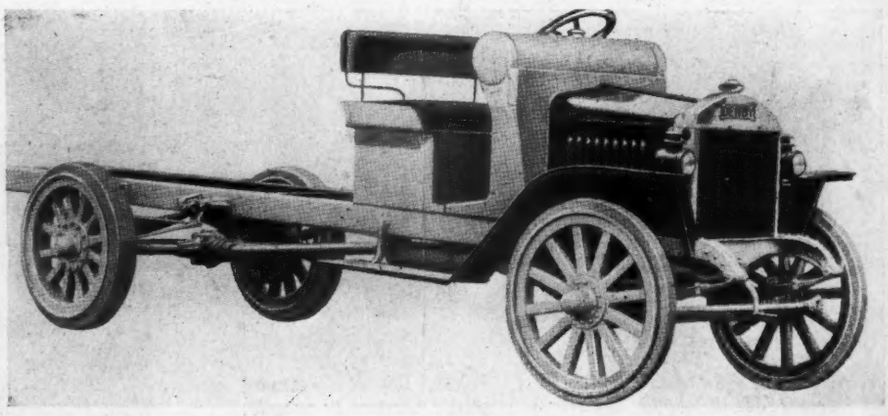
New Denby Two-Ton Truck is Especially Adaptable for Light Farm Transportation

The Denby Motor Truck Co., Detroit, Mich., is now manufacturing trucks with capacities ranging from one to six tons inclusive, the two-ton truck being the new product. This size is particularly adaptable for use among farmers, manufacturers, retail and wholesale merchants of small products. It has a comparatively large load space for a truck of this capacity, a feature necessary for economical city delivery.

The 4-cylinder engine, which is of 3¾-in. bore and 5-in. stroke, is carried on a three-point suspension. The transmission provides four speeds forward and one reverse and drive is through a tubular propeller-shaft, 2½ in. diam. with a 3-16-in. wall, to an internal gear rear axle which is made of 2⅝ in. solid, round, chrome-nickel steel and has a gear ratio of 9.8:1.

The frame of this truck is constructed of steel 5½ in. deep by 4 in. wide by ¼ in. thick. Lubrication is through force-feed and splash. The horizontal plunger pump, which distributes oil through a copper tube direct to the timing gears and over the rear and center main bearings, is driven by an eccentric on the camshaft. The radiator is built-up with cast top and bottom tanks. The standard wheelbase is 144 in. but special sizes made of 120 in. can be obtained if desired. It is equipped with Firestone solid, pressed-on tires, 36 x 3½ in. single in the front, and 36 x 6 in. single or 36 x 3½ dual in the rear. The equipment includes two side lamps, tail lamp, horn, jack and a set of tools.

Regular body size 11 ft. long by 5 ft. wide, or special body 13 ft. long by 6 ft. wide; length of frame back of seat, 127 in.; width of frame 34 in.; tread, front 57 in. and rear 61 in.; weight 3820 lb.; speed 14 m.p.h., controlled by a Monarch governor with padlock and key; brake horsepower at governor speed of 1275 r.p.m. is 29; S. A. E. rating is 22.5 h.p.; carburetor, Stromberg; ignition, Eisemann; cooling system, thermo-syphon with 16-in. steel fan; clutch, multiple disc; brake, internal expanding and external contracting with 16½-in. drums.



Side View of New Two-Ton Denby Shows Heavy Construction That is Designed to Withstand Strenuous Farm Requirements

Service is the Keynote of New Paige-Detroit Truck

ALTHOUGH no radical changes in design have been made in the two latest models of Paige trucks, built by the Paige-Detroit Motor Car Co., of Detroit, Mich., many refinements, of course, are incorporated in these new productions.

Extreme durability is the keynote of design of the Paige truck. As the majority of the Paige truck production was taken over by the Government during the latter days of the war, continual improvements to meet the strenuous demands of war service were made. The results of this experience is that in no part of the entire truck is there any inconvenience experienced in getting to any accessory, attachment or part requiring adjustment.

The engine of the Paige two and one-half truck is of Continental make, model C-2. It is of four cylinders, cast enbloc, with a 4⅛ in. bore and 5¼ in. stroke, having a S. A. E. rating of 27 hp. It is of three point suspension. A D. U. 4 Bosch magneto furnishes the ignition. A centrifugal type governor automatically limits the amount of fuel led from a Stromberg carburetor to the engine, thus holding the maximum speed of the truck to a fixed limit. A centrifugal pump circulates the water through the cooling system. This system includes a tubular type radiator, which has spiral finned tubes of exceptional strength and efficiency.

The cooling is assisted by a 20 in. fan using a 1½ in. fan belt. The oiling system is a combination of the pump and splash.

A dry plate clutch, which is enclosed in a bell housing as a unit with the engine and of Brown-Lipe make, is used.

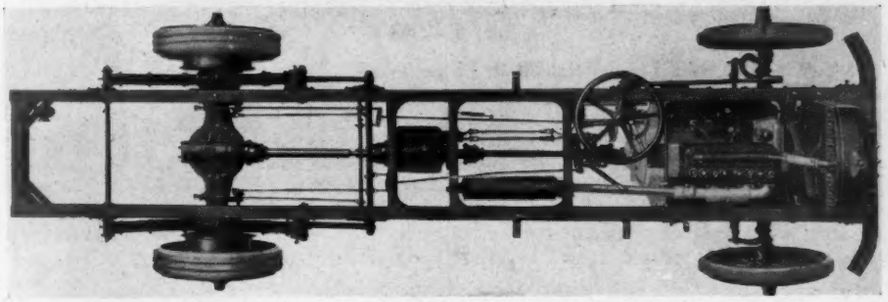
The four-speed Brown-Lipe transmission is mounted amidship to avoid the necessity of having an unwieldy propeller shaft. Thus two steady propeller shafts are provided with universal joints at either end. It is equipped with Timken bearings throughout. The axles are of the Timken-Detroit make. The rear axle is a worm drive, having a ratio of 8½: 1. It is equipped with two sets of of Duplex internal expanding brakes, expanding 18 in. by 3 in.

The springs, which are semi-elliptic. are made of special alloy vanadium steel, the front being 45 by 2½ in., tilted to cushion road shock, and the rear 54 by 3 in. The spring shackles are bronze bushed.

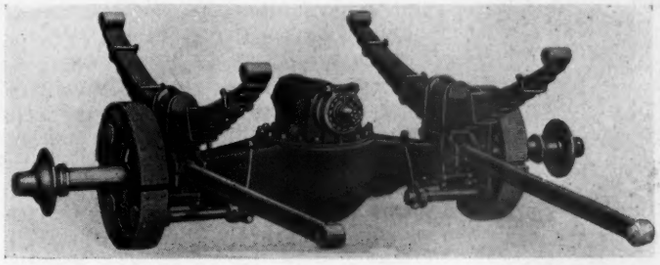
The Jacox worm and steering gear is used. The steering column is located on the left side. The fuel, which is gravity fed from a gasoline tank made of drawn steel and having a capacity of twenty-five gallons, is stored under the driver's seat.

The frame is of exceptional rigid construction and is made from ¼ in. steel stock, hydraulic cut, with 6 in. channels and 3 in. flanges. The frame is heavily reinforced with stout cross-members and heavy steel plates. The rear is doubly reinforced particularly around that section where the coupling is attached in order to withstand the pull of a trailer.

Comfort is assured the driver under all weather conditions, the truck being equipped with an enclosed cab. This cab is made of heavy gauge metal. It is provided with sliding doors and windows, and also has a divided windshield.



Paige Model 51-18 Three and a Half Ton Chassis is Solidly Built for Heavy-Duty Service



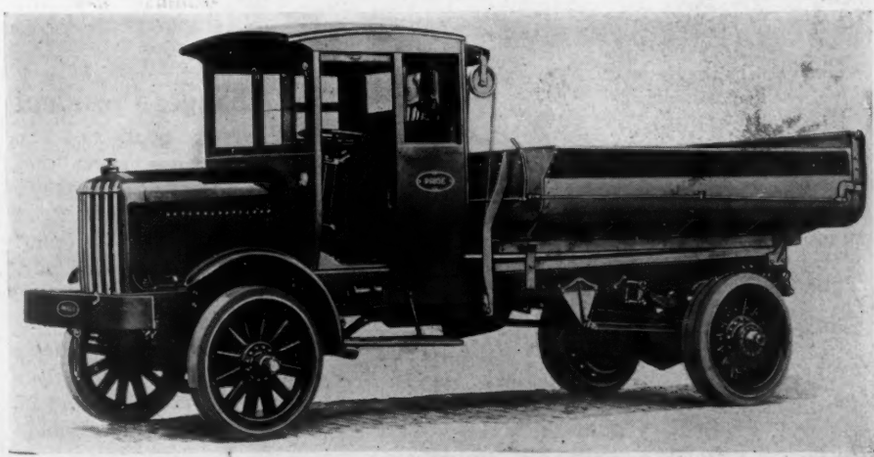
Timken-Detroit Worm Drive Axles Are Used in the Paige Truck.

The seat, which is upholstered cushion and back, is 50 in. wide, seating three people. This truck is tire equipped with 36 x 4 in. front and 36 x 7 in. rear, dual or single.

Its equipment includes an odometer, integral bumper, complete cab, mechanical horn, two oil side lights, oil tail lamp, heavy-duty truck jack, and complete set of tools.

The following will include other detailed specifications: Capacity, 5000 lb.; body allowance, 1200 lb.; wheelbase, 150 in.; tread, 58½ in. front and rear. Length of chassis overall, including bumper, 226½ in. Length of same back of driver's seat, 126 in. Width of frame, 33 in.; overall width of chassis outside of hub-caps, 76 in.; height of frame from ground fully loaded, 33 in.

The construction of the three and one-half heavy ton Paige truck resembles the smaller capacity truck in a great many respects. In this model the entire construction has been designed for more strenuous service, therefore, heavier and larger units are used.



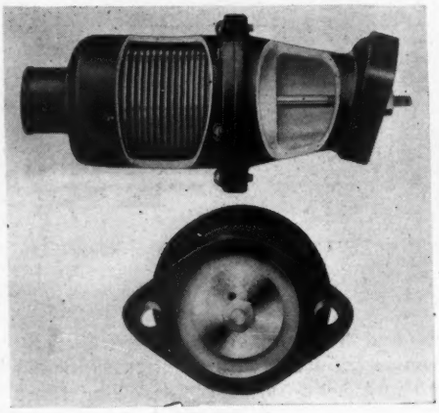
Three and a Half Ton Model Paige Truck Fitted With a Hydraulic Hoist Dump Body

Two and a Half Ton Model 50-18 Paige Truck. Driver's Cab Included as Standard Equipment. Stake Body Extra

The following is a résumé of these specifications differing from the two and one-half ton model: Capacity, 7000 lb.; body allowance, 1600 lb.; chassis weight, 7000 lb.; wheelbase, standard, 160 in.; tread, 65¼ in., front and rear; length of chassis overall, including bumper, 246 in. Length of frame back of driver's seat, 144 in.; width of frame, 35 in.; overall width of chassis outside of hub-caps, 86½ in. Height of frame from ground fully loaded, 36 in.

Heat Control in the Ward La France Truck

The accompanying illustrations show heat control features in the Ward La France truck made by the Ward La France Truck Co., Inc., Elmira, N. Y. It is said to entirely prevent radiator freezing in winter, as a quick warm-up can be obtained. The thermostat used in the Ward La France truck prevents or retards the flow of water from the engine to the radiator until the desired temperature is reached. Until the temperature is reached, the water merely circulates around the cylinders and past the radiator air control shutters. The shutters are built like the usual window blinds and placed in front of the cooling core and are operated by hand from the dash. They are simple and light and the hinge bars are supported in Raybestos strips, which eliminate wear and rattle.



Cutaway and End Views of the Thermostatic Valve

Ward La France Radiator

Covert Gear Changes President

LOCKPORT, N. Y., Sept. 29.—The Covert Gear Co., Inc., announces that majority holdings of the company's stock, formerly held by P. A. Clum, have been purchased by Alwin A. Gloetzner. Mr. Gloetzner has also succeeded Mr. Clum as president of the organization. He will make his headquarters at the factory, but the company will continue its sales and engineering offices in Detroit for the benefit of its clients and in order to take care of its rapidly expanding business.

Milk and the Rural Motor Truck Express

According to statistics gathered by Hugh L. Jennings, an authority on milk problems, it is shown that there are more than ten times as many men, horses and wagons used to haul milk to creameries and milk stations than is necessary.

At the present time, with the nation considering the cost of living, it is fitting that some agency draw attention to any inefficient and easily remedied factors that have a direct bearing on a phase of the problem. Of the multitude of foods that are in daily use, milk ranks highest in importance. Anything that can be done to make it cheaper must be done.

From almost every section of the country, and especially from territories adjacent to large cities, come reports of the wonderful success of the Rural Motor Truck Express. Maryland has 23 rural express lines operating in and about Baltimore and Washington, D. C. California has more than 150 rural express lines serving its cities directly and acting as feeders to railroads. Iowa, Michigan, Minnesota, Illinois, all report their heaviest tonnage for milk. A New York State farmer at Gilderland, delivering milk to Albany, found the railroad so unsatisfactory that he purchased a motor truck to do his own delivery. This he found so superior that his neighbors soon requested him to carry their milk. With this as a start, he formed a regular rural express line, carrying for the year 1918 about 1,022,000 quarts of milk alone.

A recent analysis of the dairy business of 70,000 farms in the United States showed each of these farms produced an average of 10,000 gallons of milk annually, of which 50 per cent. is hauled to the creamery, 25 per cent. to the milk depot, 12 per cent. to the cheese factory, 10 per cent. to the condensary and 3 per cent. used on the farm. The average round trip by the dairyman to the selling point is seven miles. Of these 70,000 dairymen about 50 per cent. make the round trip every day in the year. With horses and wagons it takes two and one-half hours to make the trip. A motor truck can cover this distance in about one-half hour, while a large truck could combine the deliveries of thirty or more producers. Here is a daily saving of 70.000 hours, which in these days of scarcity of farm labor is an item of considerable importance.

Recognizing these facts, the National Dairy Show this year set aside a large space for the display of motor trucks at this year's show, which was held in Chicago from October 6 to 12.

Air and Water for a Nickel

CLINTON, ILL., Sept. 15.—Garage dealers in Clinton have installed a nickel-in-the-slot device for supplying air and water to motor vehicles. For five cents a driver may obtain enough air to inflate his tires and enough water to fill his radiator.

Utilitor Tractor, Equipped With Quick Detachable Rim, Increases Its Scope of Farm Utility

THE Utilitor, a recent development in the small tractors or garden tractor class, is now being produced by the Midwest Engine Co., Indianapolis, Ind. Much interest was centered upon this tractor when it was first exhibited at the National Tractor Demonstration in Wichita. This interest was not misdirected as it was designed for a wide range of utility work, satisfying the combined demands of the farmer, truck raiser and country estate gardener.

Even a Mowing Machine can be Used With the Utilitor.

The Utilitor represents the result of a long period of concentrated effort by a company that has been in existence for a half century, and which has been known as a reputable concern to the engine trade. The tractor sells for $345, f.o.b. Indianapolis.

The Utilitor is rated at one and one-half hp. on the drawbar and four hp. on the belt. It is capable of furnishing power to such sundry farm equipments as the single or double plow, the small tonnage plow for breaking one-horse mowing machine, etc.

In its operation, the driver walks back of it, steering it by two handles somewhat on the order of plow handles. It is controlled by varying the pressure of the grip on the handle. As the tractor is constructed to carry its own load, no weight is brought down upon the operator. The Utilitor is being shown by dealers handling trucks, passenger cars, tractors and farm implements, the plan being to sell them in every township so that the machine can be produced in large quantities.

The Utilitor weighs but 700 lb. when filled with water and fuel. It has a 4 hp., single cylinder engine and is carried on two 25 in. diam. drive wheels, being balanced in the rear by two castor wheels. It has a cast iron frame which forms the crankcase of the engine. A feature is the crankshaft which extends down through each drive wheel and carries a flywheel at each end. The drive wheel revolves in a position which forms a bearing for the crankshaft.

Final drive is through a clutch in each wheel. By moving the hands on the left upward, the tractor turns to the left. Moving the right handles upward turns the tractor to the right, and moving the left handle up to its extreme throws out the main clutch. Its general design may be seen in accompanying illustrations.

The engine used in the Midwest Utilitor is a vertical single cylinder, 4-cycle engine, with a bore of 3½ in., a stroke of 5 in., and having a normal speed of 1200 r.p.m. It is the L-head type with removable head. The system of lubrication is the splash. Ignition is by an Eisemann high tension magneto using a standard ⅞ size spark plug. The magneto is driven off the fan shaft drive through a set of spiral gears from the camshaft. Carburetion is obtained through a ⅞ in. Kingston carburetor, the gasoline being fed by gravity from the fuel tank. The latter has a capacity of 1½ gal. and is made integral with the sides of the hood. The intake air is drawn in through the company's own design of air cleaner.

Pulley and Flywheel Details of Utilitor

Cooling is maintained by a Spirex radiator, thermo-syphon water circulation and a cooling fan.

The frame of the Utilitor is cast in one piece in block with the cylinder.

The engine has a compression of 60 lb. The valves, 1½ in. diam., are made of 3½ per cent. nickel steel, while the piston with three ¼-in. wide rings weighs approximately 3 lb. The wrist pin is clamped in the connecting rod, the bearing for it being in the piston. There are two main bearings for the .40 carbon heat treated crankshaft. These bearings are each 4 in. long by 1¼ in. diam. Each of the two flywheels is 14 in. diam. and weigh 55 lb. The flywheels are held in place on the shaft by a taper fit key and nut. The 4½ in. diam. by 4-in. face with a belt speed of 1400 f.p.m., is mounted on the right-hand side of the tractor, directly on the flywheel. The ⅞ in. diam. camshaft is carried in two bearings, each bearing ⅞ in. diam. by 1 in. long. The timing gears are spur type, being made of steel.

The transmission of power from the engine to the drive wheels is through a train of gears, which in a sense is a type of planetary transmission having one speed only. The master gear is stationary and is integral with the stud axle, through which the crankshaft passes and which forms a bearing for the drive wheels. There are two reductions from the engine to the drive wheels. The final

Utilitor Operating With Cultivator for Row Crops.

reduction is 35:1, which gives a travel of 2½ m.p.h. to the machine. The engine drives each master pinion through a clutch. Both clutches are released when the machine is idling and steering is effected by releasing either one clutch or the other by means of the handle grips. It turns in a four foot radius about one wheel.

Another exclusive feature of this tractor are the quick detachable rims. By using these rims, which have the necessary lugs riveted thereon, the operator simply bolts the rim to the bull wheel when wishing to use the tractor under adverse or different soil condition.

In order that reader may more clearly judge the size of the Utilitor it might be well to note that the width of the cultivator is 17 in. The wheels equipped with plowing rims makes the width 31 in. overall. The distance from the center of the caster wheels to the engine crankshaft is 36 in. The swivelled drawbar is 12 in. above the ground, while the ground clearance is 8 in. It is approximately 80 in. long. The wheel lugs, which are regular equipment with the Utilitor, are 1½ in. by 2½ in. steel angles.

Resume of Utilitor Specifications

Traction Wheels: Drives on two wheels, 25 x 3½.
Plow Recommended: One 7-in. and other garden tools.
Length: 80 in., **Width:** 17 in., **Height:** 36 in., **Weight:** 700 lb., **Price:** $345.
Turning Radius: 4 ft.
Engine: Own, 3½ x 5, vertical, 4-cycle, 1 cylinder, 1200 r.p.m.
Lubrication: Splash system.
Carburetor: Kingston, ⅞ in.
Ignition: Eisemann high tension magneto.
Cooling System: Water, Spirex radiator and fan.
Transmission: Double clutch and spur gear, 1 speed forward.
Belt Pulley: 4½ dia. by 4-in. face at 1200 r.p.m.

Details of the New Atlas Rear Axle

The Axle is a Radical Departure From the Usual Design

THE following description is supplementary to that published in the July issue of the COMMERCIAL CAR JOURNAL, covering the general features of the new Atlas rear axle for heavy duty service, manufactured and designed by the American Machine Co., of Newark, Del.

At that time the reader's attention was called to various improvements incorporated in this new design. Among the features pointed out was the extraordinary ground clearance of 16¾ in. with 36-in. wheel; a hermetically sealed compartment enclosing the gear ring, pinion and wheel bearings so that they operate in a bath of oil with the absolute exclusion of road dirt; completely enclosed, dual internal expanding brakes on the wheel with full winding throughout the entire circumference of the drum, and a simple, positive adjustment for wear without alteration of linkage; the location of the jackshafts and the differential in a vertical plane above the wheel centers in order that the propeller shaft may maintain a practically horizontal position, reducing wear of the universal joint to the minimum.

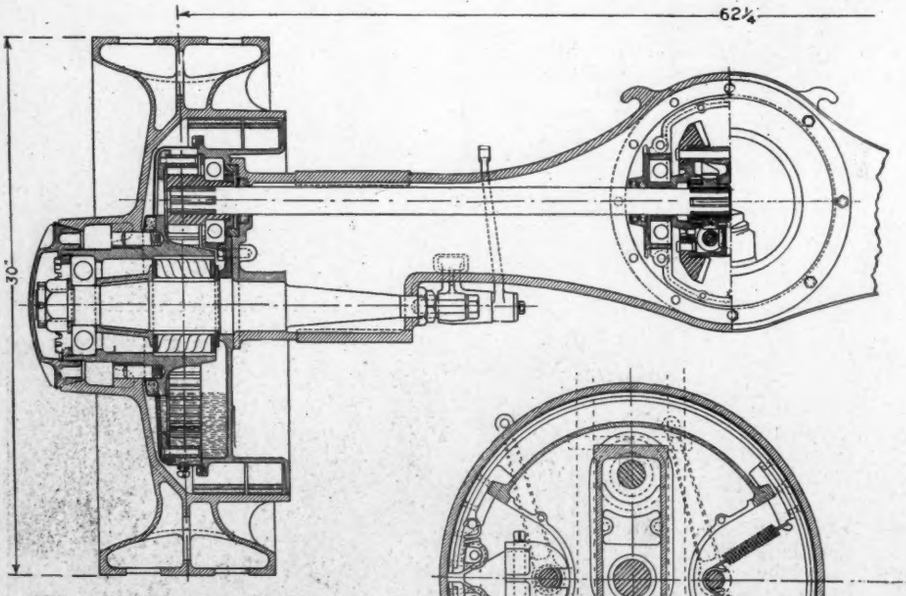
The internal gear rings of carbon, heat treated steel cut with 60 teeth of 4-5 pitch with a face width of 1¾ in. are bolted to malleable iron; the wheels, which are separate from the hubs, are made of the same material and are formed integral with the brake drums. Power is transmitted through a Powrlok differential.

The brake bands which are actuated by a split wedge are anchored at both sides. Both the service and emergency brake which are lined with Raybestos fabric are 21 in. in diam. but have a 3-in. and 2-in. face respectively. The brake shafts are mounted on Bounk Brook oilless bushings, eliminating the use of a grease or oil cup on the axle.

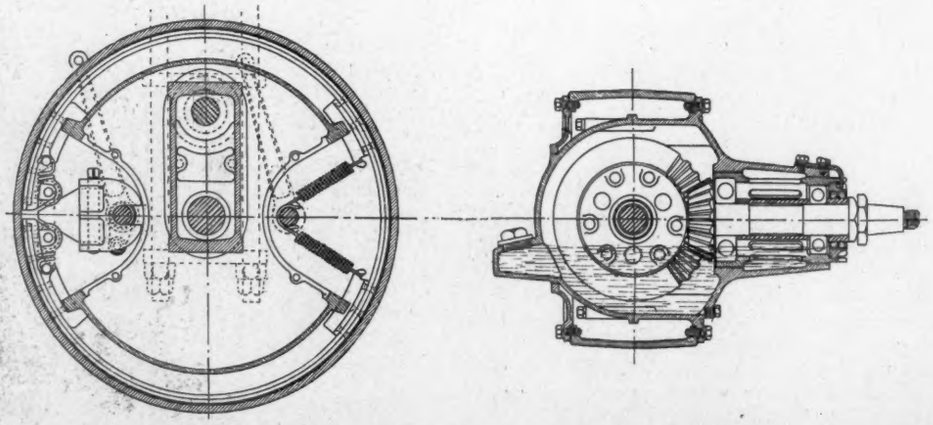
This axle including the wheels equipped with 26 x 5-in. dual tires weighs 2100 lb.; the naked axle weighs 975 lb. The standard gear ratio 9.77:1 gives a motor speed of 1094.63 r.p.m. with a truck speed of 12 m.p.h. The choice of the other two ratios namely, 8.75 to 1 and 11.3 to 1, is optional.

Under actual test conditions in which an Atterbury truck was used this axle was found to bear without any noticeable deflection or cramping of bearings or gearing under a load of 9½ tons.

Gray & Davis, Inc., Boston, Mass., has issued a new catalogue which describes the various lamps, starting, lighting, and ignition systems which it manufactures. It gives the scope of the operations of the company and illustrates with clear cut photographs and diagrams the products of the company. A copy of this catalogue will be sent upon request to the advertising department.



Above: Sectional Illustration of Atlas Axle, Showing Transmission of Power From Differential to Rear Wheel, and Support of Wheel Hub in Axle Housing.



Right: Looking Into the Brake Drum Used on the New Atlas Rear Axle.

Below: The Bevel Gear-Drive From the Propeller to Differential in the New Atlas Axle.

Truck Cuts Cost of Quarry Hauling and Solves Labor Problem

Capacity and Utility of Trucks Stimulate Increase of Production in New Hampshire Quarry

By C. P. SHATTUCK

THE general utility of the motor truck in sections not well served by the common carriers is fast becoming recognized. The use of a 5-ton White by the Smalley Souhegan Granite Co., operating a quarry about six miles outside of Milford, N. H., is an example of more than ordinary interest because the truck has made possible the getting out of granite during those periods of the year when horses are a difficult proposition.

Loading the Truck With Paving Stone Which Weighs About Twenty Pounds. It Takes Thirty Tons to Load a Freight Car

The quarry is located about two miles from a switch or siding about four miles from Milford proper, and previous to the introduction of the truck, two-horse teams were used to transport the granite to the siding. This company's product includes stone or slabs for monumental work, paving, street curbing, etc., The paving stone is a by-product composed of smaller pieces of granite worked up.

Employed Sixteen Horses

The slabs are secured in the conventional quarry manner, being hoisted to the sides of the quarry where they are cut into the required sizes. These as well as the paving stone have been hauled to the siding by two-horse teams, the company at one time owning eight horses and hiring as many more. Those hired were paid on the foot basis; that is, at a rate of nine cents the foot, which is a quarry term.

Owing to the nature of the road leading from the quarry to the main road the capacity of a two-horse team was limited to 24 ft. and as the maximum number of trips under favorable conditions were three trips, a day's work resulted in a total of 72 ft. At the time horses were used a team would earn $6.48 a day, a price not possible today even on a contract basis.

Horses Scarce in Spring

Another factor that led to the replacing of the horses by the truck was the inability to hire horses in the spring and fall, as their services were in demand by the farmers. Quite frequently the quarry would have a number of rush orders and invariably these were received at a time when extra horses could not be secured.

The limited capacity and slow speed of the horse proved a handicap in the loading of the freight cars, particularly during the war. If cars were not obtainable the practice was to unload the stone at the siding. This meant a double handling. It should be explained that it requires about an hour to load a team at the quarry, another hour to unload at the siding and about an hour to make the round trip. With a shortage of teams this meant a considerable loss of time loading a car which with paving stones requires about 30 tons or 3000 stones. The standard paving stone weighs about 20 lb. and as 1000 equal 10 tons, it is obvious that rehandling even 25 per cent. of a carload requires considerable time and additional expense.

Replaces Sixteen Horses

When James Courage took charge of the quarry he investigated the possibility of a truck, and after carefully analyzing conditions he purchased a 5-ton White. It is a used truck and was placed in service last March. It has proven a very profitable investment for the company and has made possible the elimination of horses entirely.

The truck transports 40 ft. of stone or about 5 tons a trip and averages better than 15 miles the hour on the two-mile trip to the railroad siding. Its greatest saving is its ability to haul when a freight car is at the siding and to continue the work until the car is loaded, thereby eliminating the necessity of double handling of the material as was the case with the horses. Instead of piling up stones at the siding, a big reserve is stored at the quarry and whenever a freight car is obtained the truck stays

The Five-Ton White Truck That Has Replaced Fourteen Horses at the Smalley Souhegan Granite Company's Quarry, Cut Down the Cost of Loading and Solved a Labor Problem

on the job until the car is loaded. This proves more satisfactory to the railroad, enables prompt filling of orders, and greatly reduces the cost per 1000 of transporting and handling the stone.

Solves Labor Transportation Problem

The truck has solved the labor problem for the company. As previously stated, the quarry is about six miles from the town of Milford where the quarrymen reside. There being no means of transportation to the quarry, the men were forced to walk or hire horses or automobiles. Good quarrymen are scarce in this community and as there are several quarries in Milford labor is very much in demand. Mr. Courage has solved his problem by utilizing the truck to transport the men to and from the quarry. The machine leaves Milford in the morning, picking up the men, and returns them at night. The men appreciate the ride and as Mr. Courage says, it is a beneficial relaxation after a hard day's work. Mr. Courage says that the use of the truck in this manner has enabled him to get and hold the most efficient quarrymen. This quarry is the only one in the neighborhood that is making use of a truck. And it is interesting to note that the quarry is having no trouble in filling its orders and that it's increasing its output daily.

Praises Work of Truck

Mr. Courage is a great booster for motor trucks. He said that it would be impossible to operate the quarry at a profit under the old conditions and that the truck is effecting a big saving over horses even at the old rate. It is used for long distance delivery, to fill special or emergency orders, and when business is quiet employed to do general hauling. On one of the trips made by the truck it hauled tractors and equipment to Manchester, N. H., 35 miles distant, and the bringing back of another load. The truck frequently goes to Quincy Adams, Mass., with a load of stone for a monumental company. The distance covered on a round trip is 70 miles.

A helper accompanies the driver on trips, both of whom are used in the quarry when there is no hauling to be done. In speaking of the truck, Mr. Courage said that the truck's capacity at present exceeds the output of the quarry. Although the truck travels over rough roads it is giving excellent service and has not missed a day when needed. Among its advantages is its utility for quickly getting the men to the quarry during the winter when weather conditions permit of work.

The Fulton Ground Grippers Increase Usefulness of Truck on Farms

THE Fulton Motor Truck Co., of Farmingdale, Long Island, has just announced the Fulton Ground Grippers, designed to promote the wider use of the motor truck in direct transportation from the fields to the market.

These Ground Grippers are easily and quickly applied to the wheels and need not be removed when the truck passes from soft to hard ground. The grippers do not come in contact with the hard surfaced road, but grip as soon as the wheels bear down into soft earth.

Ground Grippers are wide iron bands with metal flanges bolted diagonally across the outside of the band. These flanges are similar to those found on tractor wheels. They are attached to the wheel by four 12-in. bolts with special wide metal bands. These bolts are attached to two L-shaped metal strips, which are held in position by two spokes. The bolt from these strips is attached by nut and washer to the band.

Fitting Fulton Ground Grippers to Fulton Truck, a Simple Process Taking Twenty Minutes for Four Wheels.

Thorough tests have been made with the Ground Grippers for some time. On freshly ploughed fields the grippers permit the transportation of heavy loads satisfactorily. By using the ground grippers the farmer can dispense with the horses required to haul four and five loads from the field to make up the truck load on the harder going. He is able to transport fertilizer directly to the field and distribute it without loss of time by reloading to horse-drawn wagons at the field. During harvesting time the truck passes steadily along the fields while being loaded. Passing from the field to the road the grippers are left in position as flanges are so placed that they clear the roadbed and cause no injury to it. In event of heavy going on the road the flanges immediately take hold and are of assistance again in reaching the market. These grippers should also prove advantageous for winter use when snow is on the roads and on soft roads.

Fulton Ground Grippers on Two-Ton Fulton Truck, Showing Absolute Clearance of Hard Road With No Damage to Highway

Motor Trucks Distribute Explosives in the Missabe Iron Range

By A. V. COMINGS

MOTOR trucks are used exclusively in distributing mining explosives to the many iron ore mines scattered over the Missabe range in Northern Minnesota, making short work of what used to be a hard task in the days of horse-drawn transportation. While many of the trucks used in the work are still fitted with solid tires, practically all the trucks put on the job in the past year are fitted with pneumatics, this type of tire being especially fitted to this kind of work, where, naturally, as little vibration as possible is desired in handling the sensitive cargo of dynamite, black powder, etc.

Republic Trucks Equipped With Steel Bodies and Winter Cabs, Work in and About the Mines in the Vicinity of Hibbing

The majority of mining operations carried on in the Iron Range, especially in the vicinity of Hibbing, are of the open pit type, where the gravel, clay, etc., covering the iron ore deposits are scraped off the surface and the ore itself is then loaded on cars by steam shovels, and transported to Duluth and Superior, where it is loaded on steamers and shipped to eastern lake ports. In addition to these open pits, which reach the enormous depth of 300 ft., there are many tunnel mines, and while most of the explosives are used in the latter, much is used in the pit operations also.

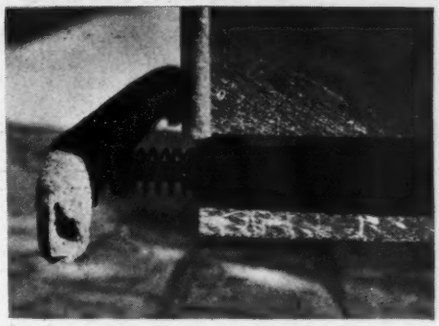
To distribute these explosives from the railroad stations nearest operations has been quite a task in the past, but motor trucks have made it simple now, and every day the trucks carry thousands of pounds of explosives to the mines all over the range from the warehouses in Hibbing, Virginia and other cities.

The Aetna Explosive Co. has recently added three big Republic trucks to their fleet of powder runners, the last word in this type of transportation unit.

On a Republic Model M-20 3½-ton chassis is mounted a sheet steel body, lined with asbestos, over which is a ¼-in. wood covering, protected in turn by ½-in. oak strips. This body is 13 ft. 8 in. long, 6 ft. 6 in. wide and 3 ft. 4 in. high and is supported by six transverse channels 5 in. in depth. These in turn rest on two 8-in. channels, which rest on the truck side frames. The weight of the body is approximately 1800 lb. It is closed at the rear by a heavy swinging end gate, and throughout is built to withstand every kind of hard usage.

The truck is fitted with Firestone pneumatics throughout, 44 in. x 10. in. cords on the rear and 38 in. x 7 in. on the front wheels. These will minimize the jars that might be transmitted to the explosive cargo.

The outfit also carries a Prestolite tank, power tire pump and speed and mileage recorder.



Bumper Mounted on Rear of duPont Truck to Minimize All Jars. Of Channel Steel, Wound With Rope.

The Dupont Company has a number of motor trucks working out of central distributing points in the iron district, the one shown herewith being a Mack 1½-ton truck working out of Virginia, Minn. Two of these trucks are working out of Virginia and three deliver to the mines in the vicinity of Hibbing, thirty miles distant. They are all equipped with steel bodies and, like most motor trucks in this region, with winter cabs for driver protection during the winter.

The roads in this section are good gravel roads, and while they have not always been kept open throughout the winter, business men in that section state that from now on they are going to be kept open the year 'round.

American Patents, Mfg. & Sales Co., Inc., Philadelphia, Pa., has recently been organized to manufacture and market patents as well as buy and sell American patents. Their offices are at 138 East Wyoming Ave.

One of the Immense Iron Ore Pits near Hibbing. Note Full Sized Locomotive, Cars and Steam Shovel in Bottom of Pit

Motor Trucks and Industrial Trucks and Tractors Economize in a Big Saw Factory Business

How the Problems of Operation, Maintenance and Dispatching Are Being Solved

By K. HERRICK

OPERATING a plant of sixty-four buildings, covering 50 acres and manned by 3,800 employes, Henry Disston & Sons, Inc., of Tacony, Pa., manufacturers of many kinds of saws and carpenters', bricklayers' and mechanics' tools, are using motor trucks and industrial trucks and tractors to their great economical advantage.

Two Units of the Motor Truck Fleet of Henry Disston & Sons, Inc., Saw and File Manufacturers, Tacony, Pa., Leaving Company Garage for Loading Platform

The car ahead is a five-ton Packard, and that just making its exit from the door is a two-ton Autocar. Both have wired express bodies

Since 1855 the company has been making its own steel, melting it and rolling it into plates for saws and other tools. This was the first, and for a long time, the only crucible saw steel plant in the United States. The factory was established in 1840 by Henry Disston and its progression since then has been marked by the numerous modern buildings, sanitary appliances and improved machinery with which it is equipped. Motorization of its transportation facilities inside and outside the grounds followed the natural progressive course.

The buildings are so arranged that there is no lost motion in the process of converting rough material into finished products. The steel works is at the extreme end of the yard and there is close observance of the logical process of conveying from one department to another and from one building to another, as the products are made ready for storage or shipment. Every building in the yard is accessible to an industrial truck or tractor and any of the elevators can take them up and down when fully loaded.

At the rear of what is considered the main building, centrally located, is a remarkable loading platform, which also serves the purpose of an elevator to the second story, where are situated the handsaw section and the packing department. The advantage of this platform, which is operated by hydraulic power and has ten tons capacity, is that it can be raised or lowered to any desired level, to suit the body of any motor truck; or any object can be craned into a vehicle from this platform when raised at any height to the limits of the second story.

It is at this central loading station that the dispatcher of the motor trucks checks off the trucks and the material that is being loaded into them. But more about this system later.

Return Loads Assured

The transportation or traffic manager, as this official is known at the Disston plant, provides that every motor truck going to city, or outside points, has a return load—a most notable arrangement for an industrial plant, at least in Pennsylvania. This point is closely observed and is one of the methods whereby economy of operation is attained.

On a truck's return to the plant from a trip, it is run to the receiving department platform at the storehouse, so that **there is never any congestion of vehicles through unloading at the loading platform.**

Then, too, there is little or no moving, at that time, of articles or material brought in, since the receiving platform is at the storehouse.

A Pennsylvania Railroad siding for the concern's use runs direct to the loading platform, leaving ample space for a truck.

It was seven years ago that the concern began the regular use of motor trucks. The work of teams, however, in emergencies and for certain kinds of work was not abandoned at once. One year ago the company spent $24,000 for

Truck-Load Being Delivered at the Disston Receiving Platform

All incoming merchandise is deposited at this point, which is the storehouse, centrally located. No loading is done here

team work, in addition to the cost of three gasoline trucks. Since that time the company has purchased three more gasoline-propelled trucks and besides having paid for themselves, the trucks have wiped out the teaming cost.

The present operating fleet of motor trucks belonging to the company consists of the following: One five-ton Packard, light express wire body; a two-ton Dorris, with similar body; a two and one-half-ton Autocar, also light express body, and a light delivery, closed body, electrically operated two-ton car made by the Commercial Truck Company.

Varied Scope of Utility

The Packard is used for hauling material of all sorts; covers freight yards; delivers to wharves and depots and picks up articles consigned to Philadelphia. The Dorris car is employed in city deliveries, but sometimes may go on trips as far outward as League Island, where is located the Philadelphia Navy Yard. The Autocar usually does any work that may arise in the middle of the day, otherwise it is held in reserve.

The Commercial truck is known as the "jack of all work" about the plant, hauling boxes, for instance, and such material as is not being conveyed by the company's fleet of industrial trucks and tractors.

Each truck has a driver and a helper. Frequently it is necessary to hire outside motor trucks. In such cases it is possible to obtain the services of truck-and-driver combinations for $30 a day.

In addition to the regular operating fleet of trucks, the company has the following "work" trucks, that is, vehicles not used to conduct the company's business proper: One five-ton Pierce-Arrow, equipped with dump body and hydraulic hoist; two Autocars, with gear dump box body, used especially for hauling lumber and dirt, each truck being of two and one-half-tons capacity, and a small, light express Dodge, for conveying mail matter to the post office and bringing mail back to the office.

Well Equipped Repair Shop

The company has its own efficiently conducted garage, with foreman and an ample staff of assistants. In connection with the garage, the Disston plant has a well-equipped repair shop, with the usual tools for a small fleet; but where the job is deemed so difficult for repair that it will consume much time, the car needing attention is sent to the service station of its manufacturer. In fact, the company selected cars for its fleet which are well provided for in this territory in the matter of service stations maintained by their makers.

The Disston concern has an arrangement with a Philadelphia motor hauling contractor, the Federal Transit Company, whereby the latter's loading and receiving stations at 426 Market Street and at Hancock Street and Columbia Avenue are at its disposal; but the contractor does not turn a wheel for the Disston plant, nor is it on that company's list of truckmen to be employed in emergency work. The arrangement may be understood through any incident in the day's work like the following: The Disston Company may order three kegs of nails from the Hoopes & Townsend Company, bolt, nut and rivet manufacturer, of Broad and Buttonwood Streets, Philadelphia, its place of business being a considerable distance from Tacony. A Hoopes & Townsend truck will convey the order to the receiving platform of the Federal Transit Company, at 426 Market Street, where the Disston Company's Dorris truck is sent for the lighter type of materials to be brought to the plant. The Dorris truck, at the end of its rounds of delivery from the Disston plant, will stop at the Federal Transit Company's Market Street station, collect the kegs of nails and return with them and whatever other orders its has to get, to the company's plant.

While to the casual observer it might seem like a lapse in efficiency to require two handlings to get a small order like three kegs of nails, when it is recognized that the Disston truck goes out with a load and virtually never fails to return with one, on its schedule of operations, the economy for the Disston concern is at once patent. If the order to be taken up by a Disston truck consisted of a quantity of heavy material, it would have been conveyed to the Hancock Street and Columbia Avenue station and the Packard would have been dispatched to get it. This car's average load is 8000 lb. each way.

For such a huge enterprise as the Disston plant, materials constantly are being purchased, from flour paste for

DAILY TRUCKING SHEET

Truck No. Driver Date

Material	Quantity	From	To	Arrived	Left	Miles

Gasoline Used Lubricants Used

Speedometer Reading MORNING NIGHT Total Mileage

Miles per Gal. of Gas

Supplies or Extra Expenses

Total Expense

Weather Conditions Road Conditions

Routine Work

Repairs or Adjustments

Remarks

Supt.

Face and Reverse Side of the Daily Trucking Sheet for Record and Analysis, Used by Henry Disston & Sons, Inc.

boxes, to rock salt, nails and the heavier supplies necessitated by the business, including grindstones, of which thousands upon thousands are used, one section of the yard near the Delaware river bank being devoted to grindstone storage, these stones varying greatly in size, according to the kind of saw or other tools to be applied to them.

Buda Electric Industrial Truck Hauling Trailers Up Warehouse Incline With Load of Boxes

Not only is the river frontage of the Disston plant buttressed by worn-out grindstones, but the Disston concern supplied all the grindstones, free of charge, from which the town's curiosity, the Baptist church, was built.

Allow Drivers to Select Route

The Disston traffic manager, Joseph Biles, and the assistant traffic manager, G. S. White, take pride in selecting drivers for their intelligence and knowledge of routes. The drivers are allowed to pick their own routes in making a series of deliveries and collections and this has been found to work out better than arbitrary orders from the office.

The Packard truck, which covers on an average fifty miles a day, usually leaves the Disston loading platform at 8.30 in the morning, as does the Dorris, when a route has been laid out, but this is not always the case. The driver may take the car as far as League Island, for instance, and from there pick out his route as expeditiously as possible. When the Dorris is on a regular run, including the Navy Yard at League Island, it will average sixty miles to the day's work.

The Packard truck may make deliveries in Frankford, on the outskirts of Philadelphia, where many large textile mills are located; go thence to the P. & R. freight station, in Noble Street; take in various steamship line piers along the Delaware river and touch at other points in delivering freight.

The Autocar does not average more than seven miles daily, including its trip to the freight station in Tacony, only the Pennsylvania Railroad having a depot here. The nearest depot of the Reading is in Frankford.

The electric Commercial truck, in its many ramifying trips about the plant, and possibly through Tacony on various errands, will average fifteen miles a day.

While the company estimates the average daily operating cost of the two-ton gasoline truck as $10, against $11 for the electric truck thus far, for the present year, in 1918 comparative operating costs were worked out as follows:

Comparative Operating Costs of Electric and Gasoline Two-Ton Trucks in 1918. Operating Costs Per Year.

	Electric	Gasoline
Depreciation on investment, 10%	$713.00	$520.00
Interest on investment, 6%	427.00	311.00
Battery maintenance, based on 10-year renewal	247.00	.....
Repairs and renewals	120.00	120.00
Tire maintenance	240.00	240.00
Current, 9000 KW @ 1c per 45,000 miles	90.00	.....
Gasoline, 1000 gallons a year as basis, @ 25c per gal.	.....	250.00
Lubricating oil	5.00	20.00
Insurance (fire, etc.)	173.00	266.60
License fee	25.00	25.00
Garage charges	60.00	60.00
Total, per year	$2,100.00	$1,812.60
Cost per day (300 days basis)	7.00	6.04
Driver's wages per day.	6.00	6.00
Total, per day	$13.00	$12.04

The office system for truck operation is simple. The usual form of delivery slip, made out in triplicate, is employed.

Goods sent out are assembled on the second floor of the main building in the department of city delivery, and are lowered on the movable platform to truck level, where they are loaded on the vehicle.

The driver takes with him the two copies of the triplicate slip, a white copy, which is signed by the customer on receipt of goods, and which is to be returned to the office of the Disston Company by the driver, and a buff copy. The signed slip is then placed in a filing cabinet for record, filing being alphabetical, by customer's name, and grouped according to date. The driver destroys the buff copy of the triplicate on delivery of goods, so there will be no occasion to file two copies.

The Daily Trucking Sheet, so-called, but in reality a manila card 7¾ in. x 5¼ in., is kept on file in the office for record and analysis of each trip by each truck. This card is illustrated herewith. Each card is signed by the superintendent of the department.

Thus each truck has its complete record, with an analysis of its day's work, from which its cost to the company is easily ascertainable.

Industrial Trucks and Tractors Kept Busy

This company is using three makes of industrial electrical trucks, some of which were especially built to the concern's specifications, adapted to this particular business.

There is a fleet of fourteen, altogether, divided between tractor and truck types, some having worm drive gear and others being chain driven. There is also a battery of twenty-four trailers, which can be used interchangeably. Each of the tractors and trucks alone can carry easily 3000 lb., and with a single trailer about 8000 lb.

The makes are as follows: Elwell-Parker I E type industrial truck; Automatic industrial tractor and Buda industrial truck. Edison batteries are used in all types.

The Elwell-Parker truck used here is only 30 in. wide, as the vehicle has to go through narrow passageways about the plant.

The Automatic tractor has the advantage of enabling the driver to couple on or release trailers without leaving the driving position, thus saving considerable time in transportation.

The Buda industrial truck has a carrying capacity of 4000 lb.

This vehicle is fitted with an end gate equipped with hooks and when hung from the platform to the floor it makes a substantial skid for loading and unloading heavy material. The truck's speed when empty is from one to seven miles an hour.

The trucks and tractors do both yard and inter-departmental work, carrying anything from grindstones to steel, boxes, files and circular saws. These tractors are constantly running in and out of the steel works and the circular saw plant, with trailer loads attached. Many times a day they are taken up on elevators as the progression of the work from department to department demands.

While there are concrete pavements extending to most of the buildings and along which the trucks and tractors run, the problem of maintenance is considerably complicated by the variety of kinds of road over which it is necessary for the vehicles to run in the course of a day's work. In addition to concrete

there are tamped, gravel and plain dirt routes within the yards. This is one reason why, thus far, the Disston concern has not individualized the operating costs of the trucks and tractors, but charges up all such expense to "Industrial vehicle operation" collectively. It is the intention of the concern to ascertain individual operating costs carefully.

The industrial vehicle experiment was first tried by the Disston plant three and one-half years ago, and the grouped results, as trucks, tractors and trailers have been added from time to time, until the present fleet was acquired, gave assurance that there was economy and efficiency in operating them. They have done away with the laborious, slow, hand truck at the plant and greatly relieve inter-departmental labor. However, officials of the concern agree that the present group, or mass method of accounting tractor costs will have to be abolished. The item of repairs will have to be individualized, while now it is charged up generally.

All repairs to industrial trucks and tractors are made in the centrally located machine shop. It has been ascertained that the most expensive part of using trucks and tractors here is not actual operating cost, but upkeep, owing to the previously mentioned variance in roadway conditions and the manifold uses to which the machines are put.

The industrial trucks and tractors are parked, when the day's work is over, in the garage, which is a spacious one. There are two central charging stations in the yard, past which these industrial vehicles run many times in the course of a day, so they do not have any traveling to do to be recharged.

Elwell-Parker Type "IE" Electric Industrial Truck Pulling Trailer Load of Files From Factory to Assembly Department for Shipment

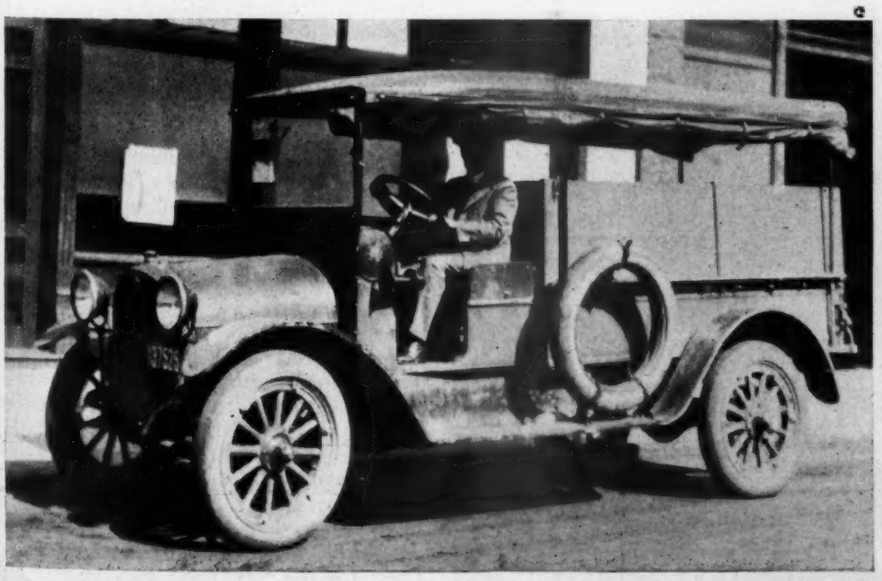
Hauls Wheat, Then Sells Farmer the Truck

When the threshing season came along in North Dakota this year F. V. Williamson, sales manager of the Moore-Reo Company, at Grand Forks, N. D., made up his mind he was going to prove to the farmers in that part of the big State that a Reo "speed wagon" could haul their wheat to the elevators so much faster and cheaper than horses could do it that there wouldn't be any argument left to protect the poor old farm horse in his job. The standard body of the Reo "speed wagon" is of the flareboard express type, so Williamson had 2 ft. added to this all around with removable sides and ends, making what they call a "grain tank" out in that country. With this outfit he has hauled hundreds of loads, demonstrating to the farmers of North Dakota, usually about 60 bu. to the load, and as a result has sold all the Reo trucks he could get from the factory.

The speed wagon is fitted with pneumatic tires, of course, and with the demonstrating he has been doing and as a result of the propaganda spread by the National Motor Truck Development tour, which was in Grand Forks in September, Williamson expects to sell several times as many Reos next year as he did this season.

"You've got to haul the farmer's own products off of his own farm over the roads he has to use to convince him that you've got a truck that will fit his needs," says Mr. Williamson.

So he does just that. And it makes him many sales.



The Standard Flareboard Express Body of the Reo "Speed Wagon" Was Equipped With Two Additional Feet of Removable Sides Preparatory to Demonstration to the Farmers

Automotive Associations to Have Central Body

NEW YORK CITY, Sept. 15.—Managers of the National Automobile Chamber of Commerce, Motor and Accessory Manufacturers' Association, Trailer Manufacturers' Association of America, National Automobile Dealers' Association, and American Automobile Association, recently held a meeting. They decided to formulate a plan of co-operation, subject to ratification by their respective directors. This permanant committee, which it was decided to form, is to consist of a representative and an alternate, appointed by each association represented, and is to draw up a plan of action and complete details following out the general plan outlined at the meeting. This committee is to hold meetings at stated intervals and to serve the various organizations, as well as the central one, in every way possible. It is hoped that it will be of great service to the automotive field in an economic way as well as proving its worth in the endorsement of certain legislation vital to the industry.

Indianapolis Celebrates "Highways Transport Day"

By JOE KELLY

WHAT a state can do in the propagation of the motor truck and its big social service in transportation was shown by the celebration in Indianapolis September 25 of Highways Transport Day, in which all the business interests combined to call attention to the ship-by-truck movement.

The motor truck dealers of the Indianapolis Automobile Trade Association lined up with the Indiana Transfer men and the Indianapolis Chamber of Commerce to put over the biggest motor truck parade that Indianapolis has ever seen.

The date September 25 was chosen because of the convention in Indianapolis of the Indiana Bankers' Association and the meeting of the Indiana State Association of County Commissioners.

Both bodies viewed the parade, which consisted of 200 motor trucks, passed through the downtown streets, that the general public—the ones who pay the bills—might get their share of motor truck education.

The parade consisted of trucks which were in actual service; trucks used on rural motor express lines radiating from Indianapolis; trucks used in overland hauling, and trucks used in carrying stock from the farm to the Indianapolis stock yards.

The bankers and the commissioners were converted to the motor truck, if they did not already believe in it, for the parade was a concrete example of the big service which the motor truck was doing in Indiana.

"Bankers do not look askance now at the farmer, or business man, who wants to purchase a truck. It is now considered part of the farmer's or business man's equipment," said former President Morris, of the State Bankers' Association. "With good roads, the motor truck will furnish the transportations that many communities need; in fact, most communities. A glance at the map showing the steam roads and electric lines in Indiana show a mass of territory now punctured by these lines. We need every means of transportation we have, and we need the development assured of the motor truck."

The commissioners, in whose hands much of the local road building will still be, recognize that the farmers and business men must be served with the motor truck if goods from the cities are to be received at the lowest cost of hauling and that if the produce from the farms is to be carried to the city and sold at the best profit.

"Indiana is rapidly solving its transportation problems," said L. H. Colvin, local dealer in trucks and prominent in the councils of the Indianapolis Automobile Trade Association. "In the intensive work after the war, where would we be if it were not for the motor truck? Indianapolis is saving 50 per cent. of the old costs by hauling its ashes and garbage in motor trucks.

"Without motor trucks why talk about quick and intensive construction of roads? The business man, city and rural, without the motor truck is not efficient. The farmer needs the motor truck and the truck is becoming the part of the big farm equipment.

"The rural routes coming and going out of Indianapolis are already giving good service. Picture this service when Indiana has her system of good roads, built for motor truck traffic. Then watch us speed up; watch costs go down; watch production increase. The motor truck is Indiana's greatest economizer.

"That the congestion at the local freight houses show the need of the motor truck is proved by actual survey. For five days, at one of the electric line terminals, it was found that the losses in time in loading and unloading amounted to from $163.60 to $180 daily, which yearly means $60,000.

"The demurrage in Indianapolis—it has been estimated amounts to $50,000 yearly.

"All of which proves the need of more truck transportation to relieve this congestion."

Educating the Public to Advocate Good Roads

Extracts From Address Delivered by Tom Snyder, Secretary Indiana Transfer Association, Before Indiana State County Commissioners' Association on Motor Truck Service

I HAVE been asked to speak to the County Commissioners on the subject of Highways Transportation, and what impression two years' experience in operating a Highways Transport Division has made on an active commercial organization.

During the great war the need of power conservation was most imperative. It was quite the patriotic thing to conserve power, and especially important to conserve transportation power.

The great American railway system was groaning and creaking under the immense loads heaped upon it. Early in 1918 it became necessary to haul production while the railways were given an opportunity to relieve congestion at terminals throughout the United States.

Some wise heads saw the immediate need of conservation, concentration and added power. A vigorous campaign was started out of Washington calling upon the motor truck and the highway. The slogans chosen were. "Save a freight car for Uncle Sam," "Don't wear the road without a load," and "Give the short haul to the motor truck."

The Indianapolis Chamber of Commerce plunged into the movement by establishing a Return Loads Bureau at the Indianapolis stock yards, at which return loads were secured for trucks which hauled stock to the yards.

Cleaning and washing methods were provided and hundreds of trucks were brought down to the wholesale district and loaded with groceries, hardware, drugs, drygoods and other products, with the result that when the armistice was signed, six hundred tons per month were being hauled out of Indianapolis on motor trucks that otherwise would have returned empty, saving from 30 to 40 freight cars per month and releasing them for the important service of hauling products to the seaboard.

The need of the hour is that it be understood and applied.

The cry of car shortage when grain is to be hauled, the cry of car shortage when coal is to be hauled, the cry of car shortage when almost any unusual demand is made upon our transportation systems, is evidence that transportation has not kept pace with industry, unless the motor truck be accepted and applied as a definite and concrete link in the whole scheme and system of transportation.

The motor truck and the highway built to carry it will bridge a very narrow, but very deep, chasm between the agricultural producer and the industrial consumer. The country and the city are too far apart; the motor truck and the highway will link them closely.

It is a very common occurrence for a freight car to be tied up for 24 to 48 hours waiting terminal facilities. It is then put upon the rails for a short haul of three or four hours and is again tied up for 24 hours in unloading. This is bad industrial economy when the motor truck can pick up a shipment at the consignor's place of business, deliver to the consignee, returning to its base while the freight car is idly waiting to be set for loading. A recent survey proved that many shipments could be delivered to consignees 30 and 40 miles away while long lines of motor trucks waited for unloading platforms at the local traction express office. The same survey showed that the industrial loss on vehicles waiting on loading and unloading platforms at the local traction express office totaled more than $60,000 per year.

Gentlemen, would it not be more sane to put this money into highways and apply the motor truck? Steam and electric railway terminal facilities are already incapable of meeting the demands of society and industry. Today and every other day in the year there are from 3000 to 4000 freight cars laying on side tracks in and around Indianapolis waiting these limited facilities.

Because of these facts there is enough money wasted annually in Indiana to build and maintain 1000 miles of good industrial highways. Motor trucks and highways are already securing to the farmer from three to five cents per pound more for his cream than he could have secured by the less convenient and slower method of transportation. Motor trucks and highways are already saving many thousands of dollars for farmers because of the better and quicker method of getting hogs and cattle to the market.

The roadside market has become a fixed reality. There are now in Indiana at least 1000 farmers who have gone into the business of farm door distribution. These farmers have placed signs on the roadside in front of their homes, and each morning these signs advertise to the passer what the farmer has for sale. It may be one bushel of potatoes, or tomatoes, or apples, or anything of too small a quantity to take to market.

The day is near when every highway will be spotted with roadside markets. These markets will offer the products of the farm directly to the consumer, or to the Rural Motor Express man, who will deliver directly to the grocer or to the city huckster. The farmer will stay on the job of production and a better scheme of transportation will take over the job of distribution.

A real illustration of the possibility of highway transportation is found between Toledo, O., and Detroit, Mich., and between which there is a real highway. The distance is 60 miles, but there are many 5-ton motor trucks pulling two five-ton trailers loaded to capacity and covering the distance in a schedule time of 3 hours and 20 minutes.

The great social need of the hour is highways, the great industrial need of the hour is highways, industrial highways, and right here I wish to say that it is to be regretted that the tendency upon the part of many highway interests is to see the scenic highway first, the pleasure car highway first. Do we really propose to build pleasure car highways before we serve the great crying need of industry and society? Do we wish to do something real toward cutting the high cost of food? Then let us build industrial highways and apply the motor truck.

Do we wish to supply coal for the needs of the winter? Do we wish to turn millions of wasted money into useful channels? Do we wish to prepare some relief from the paralysis of a railway strike? Do we wish to open new channels, and create new and closer relationship between the two greatest foundations of industry—the American farmer and the American wage-earner? Then let us build industrial highways and apply the motor truck.

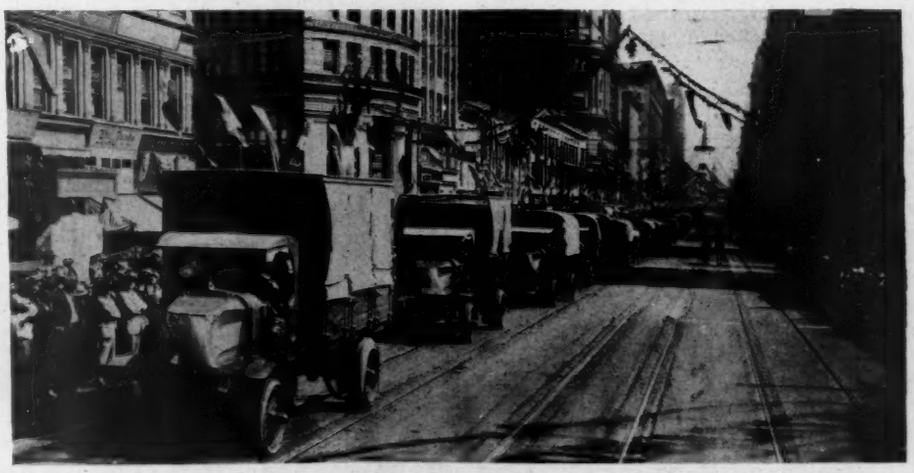
A "Horrible Example" of Overloading

The facts concerning a ¾-ton International motor truck carrying a load of 3972 lb. and the circumstances surrounding this truck abuse are told by E. J. Filiatrault, president and manager of the Mutual Auto Co., of Duluth, Minn., as follows:

"The truck belongs to Sam Southwick and on August 27th last I happened to see it going by, loaded to such an extent that the springs were almost reversed. I called to Southwick and asked him if he knew how much of a load he had on the truck, and he said he didn't, but didn't think it was very much of an overload. So we took the truck to some scales and actual weighing showed that the truck had on 3972 lb., or considerably more than two and one-half times the load it was built to carry. And he had brought this load over gravel roads 42 miles, from Cotton, Minn., to Duluth, in two hours and forty minutes.

"We handle the International truck in Duluth territory and while I was proud of the way the truck had handled the load, naturally I didn't want to see it done again and I gave Southwick a strong lecture on the evils of overloading a motor truck. He said he didn't realize that he had such a load on. He had just kept putting on one sack after another till he thought he had a pretty good load. Having brought the facts forcibly before him by calling his attention to the abnormal condition of the springs and of the results apt to occur, though still remote, he realized the danger of overloading and accordingly decided to pay more attention to the weight of his loads in the future.

"I believe truck distributors and salesmen should try very hard to impress upon buyers the evil of overloading their trucks, for it certainly is not good for the truck business. A motor truck should not be called upon to carry huge overloads any more than a wagon. It may not break down, as wagons frequently do when overloaded, but it will wear and strain the truck and shorten its life very materially."



Army Trucks Finish 3,000 Mile Trip in San Francisco

The end of the trail for the army truck convoy which started from Washington, D. C., for San Francisco. View shows Mack trucks leading along Market Street, which was gaily decorated to receive them with crowds lining the walks. Seventy-two trucks made trip in sixty-two days

The Simple English of Dollars and Cents Sells Motor Trucks

A TRUCK salesman had gone over the proposition very thoroughly with a farmer prospect. He had shown him exactly what it cost to haul the produce to market with horses and what it would cost with a truck. Apparently the farmer did not doubt these figures. Still he would not buy the truck. Finally the salesman asked him point-blank why he hesitated about buying. The farmer answered that he was sure of his horses. He knew when the team set out just when it would arrive at the market, but that he could not feel so sure of the truck. It might break down.

Bald Facts

The salesman had already shown him the sturdy construction of the truck and had endeavored to make perfectly plain the fact that there was not any more danger of the truck breaking down than of horses failing to complete the trip. To still further convince the farmer of his utmost faith in the truck he told him that if at any time he was making a trip to market his truck broke down, the service station would come out with another truck and take his load to market. "If you will do that," said the farmer, "I'll buy the truck," and he did.

It is simple English and dollars and cents talk that sell trucks to the great mass of truck prospects. In order to make these effective, however, in order to talk intelligently, in order to guarantee results, there are certain fundamental things a salesman will have to know about the transportation problems of his prospect. These in the main are the present cost of transportation, the size and the weight of the loads carried, the average length of trips, and the size of trucks which will prove economical. In some cases it may require the services of engineers and transportation experts to secure this data. There are many cases where most of it is apparent.

If a grocer is a prospect for one truck to take care of his delivery service, he is going to be very much more impressed with the practicability of the truck if the salesman spends a few hours telling him in plain, simple English just what the truck has done for others and what it will do for him, than he will be if he is shown a lot of mysterious figures.

Present Definite Information

The great mass of truck prospects are like the grocer. They are just plain, practical men, who care little for figures unless there is a dollar sign at the left of them. What they want is something that will save them money or aid them in making more money. They want the information presented to them in the simplest straightforward manner. The simpler it is presented the easier it is for them to understand it and the sooner they are going to make purchases.

It is true that there are a great many cases where it will pay, where it even may be necessary, to go into transportation problems with the greatest thoroughness before a sale is made. These are usually prospects for fleets where the order will warrant considerable preliminary expense. In these cases also the men who have the decision in hand are probably scientific men themselves. In any case they are well educated.

Common Sense is the Selling Requisite

It is not necessary, however, to have a college education or to be able to use a slide rule in order to buy, to sell or to operate motor trucks. There are good prospects who can hardly write their names. These prospects cannot appreciate engineering service unless it is translated into the simplest language and expressed in dollars and cents.

The time has passed when the greatest volume of truck sales will be made to men who have had a training which enables them to appreciate mysterious-looking mathematical calculations. There are more and more prospects like the fruit peddler, who when asked what it cost him to operate the truck he is now using replied, "I don't now what it does cost. I guess it costs more than a horse, but I can get my day's work done two or three hours earlier than I could with a horse. It makes my life more worth living and I would not go back to a horse under any circumstances." These people are buying motor trucks because they fill their wants.

Farmers Dissatisfied With Express Service

Experience has proven to produce farmers in Pennsylvania the futility of shipping their poultry and eggs to Philadelphia and other cities where a long haul is involved. According to J. K. Schultz, a Philadelphia produce commission merchant, the express service is such that it has permitted thousands of eggs to be broken in transit and thousands of chickens to die of starvation and suffocation.

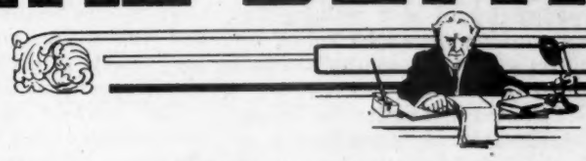
One of Mr. Schultz's patrons wrote to him recently stating that he had been forced to cut out practically all express shipments because the inefficiency of the express companies has become so great. Another produce man claims that almost 100 per cent. of the loss from breakage, wastage, and non-delivery could be avoided by proper management and system. Sometimes the express companies have even repaired the outside of damaged egg crates and delivered them for undamaged packages. These companies take their time in returning empty crates and allow them to accumulate while the shippers are clamoring for crates in which to make their shipments.

Efficient methods by the express companies would increase the shipments, reduce rates, save innumerable tons of food each year, and reduce the cost of living. As matters now are, farmers who formerly shipped to Philadelphia and other thickly populated sections, have purchased trucks and are delivering their produce nearer home. In this way they prevent the breakage, wastage and delay of the delivery by express, which resulted in making their profits so negligible that it was no longer worth while to market their produce by the old method.

Part of the Atterbury Showing in the Philadelphia Industrial Pageant

The Stability Motors Company, Philadelphia, entered quite a few floats in the recent industrial pageant which, in no uncertain way, called attention to the various departments of the company's business. The above illustration represents the service department. This display emphasized the fact that modern methods prevailed in the departments of the Stability establishment. This concern represents the Atterbury, Chevrolet and Defiance trucks; also Fruehauf trailers.

LEGAL DEPARTMENT



All Employees Who Drive Trucks Are Not Chauffeurs

An interesting question arose in the recent case of State vs. Matthews, 214 Southwestern Reporter, 339, as to whether defendant, an employee of an oil company and engaged in delivering oil to customers from a motor truck, was subject to the provisions of a Texas statute, requiring "chauffeurs" to be licensed.

Defendant used to drive a horse-drawn oil wagon as an incident to his employment by the company as salesman, taking orders for and delivering oil "on the spot." Through industry he rapidly increased his employer's trade—so much so that the horse-drawn vehicle became inadequate. The company then furnished him with an auto truck, and increased his salary as salesman, he being paid nothing for driving the truck. Nevertheless he was prosecuted for having violated the statute, which requires "chauffeurs" to be licensed before operating motor vehicles. Defendant was convicted in the trial court, but the Texas Court of Criminal Appeals has reversed the conviction, saying:

"Said act provides that * * * by 'chauffeur' is meant any person whose business or occupations is that he operates a motor vehicle for compensation, wages or hire.

"This definition as well as the provisions of this act seem to apply to those who are known as chauffeurs, and who operate motor vehicles as such chauffeur for compensation, wages or hire. This is the legislative definition, and by this the court should be governed. It would seem from reading the definition of 'chauffeur' that in order to bring him within that class he must operate the motor vehicle as such for compensation, wages, or hire, and it would further seem this would apply to the fact or relation of driver of the vehicle for compensation, wages, or hire, and would seem to exclude the idea that the vehicle was used as an incident to carrying on the business. If appellant was driving the auto truck for a stipulated sum or wages, or part of the profits that might arise from the use of the vehicle, when used by others, he might be within the definition given by the Legislature, but the relation, however, seems to be direct, that the chauffeur must operate the vehicle as such and for the purposes of making money, and should as chauffeur receive compensation for operating it. The writer does not understand that, where a party is employed in soliciting orders and delivering goods as in this case, his services and the use of the vehicle in delivering the goods would constitute him a 'chauffeur' within this definition. Such seems to be the accepted idea wherever the matter has been discussed. We find in 11 Corpus Juris, on page 747 * * *:

"'The accepted meaning of the word "chauffeur" in every state where the terms is used in a motor vehicle statute is a paid operator or employee, and includes in it the idea of compensation for the operation of the vehicle. In some of the states, such as Massachusetts, New Hampshire, Vermont, the clear distinction is made between the license of an "operator" and the license of a "chauffeur," and in other states, such as Connecticut, Rhode Island, District of Columbia, Delaware, and Maine, where the law provides that all operators shall be licensed, the word "chauffeur" is not used at all in the statutes, but the more inclusive word "operator" is used. * * * As far as the automobile industry and users of motor vehicles are concerned, it would only be a strained and unnatural construction, and foreign to the accepted usage, that the term 'chauffeur' could be made to include operators other than employees for hire.'"

Trucks Featured at Trenton Interstate Fair

At the Trenton Interstate Fair, Trenton, N., J., the "City of Machinery" was devoted to the display of passenger cars, trucks, tractors and machinery.

The exhibits this year so far exceeded those of other years in quantity and size that the old boundaries of the "City" had to be extended. These exhibits were held near the Midway gate and close to the grandstand and which resulted in more attention than usual being paid to the machinery.

The truck exhibits easily dominated this section. Over thirty makes and fifty trucks were on display. A large number of these were equipped with bodies suitable for the various kinds of hauling on the farm. Farmers from the sections having sandy soils were especially interested in the pneumatic tired trucks, since their superior pulling qualities in sand are so very pronounced.

The display of the Samson Tractor Co., Janesville, Wis., attracted unusual attention. The Samson ¾ and 1¼-ton trucks were exhibited in the East for the first time. These may be equipped with extension rims on the wheels so as to give traction under the very worst conditions. The Model M and Model D (Iron Horse) tractors manufactured by this company were also on display, as was the Samson nine passenger car, which lists at $750. On the other side of the space were two of the Sunnyhome electric plants manufactured by the same company. There were installed in the portable houses in which they are placed on the farms. A large steel bungalow "Sunnyhome" was used to demonstrate the many household appliances which can be used with the Sunnyhome system.

Among the other trucks on display were the Mack, Hahn, Acme, Chevrolet, Clydesdale, Kelly-Springfield, Stewart, Dort, Republic, Day-Elder, International, Federal, Brockway, Vim, White, Packard, Kissel, Ford, Autocar, Reo, Denby, Sterling, Paige, Keystone, Nash, Rowe, Selden, Samson, Jumbo and Norwalk.

Risks of Injury Assumed by Motor Truck Operators

Long before motor trucks were dreamed of there came to be well established rules of law which perfectly fit all relationships existing between employers and employees in the manufacture and use of such vehicles, as well as employment relations in other industries. One of these rules is that an employee assumes such risks of injury as are known to him, or ought to be known to him, in the exercise of ordinary care for his own safety.

A concrete example of the application of this rule is afforded in the decision of the New Hampshire Supreme Court in the recent case of Merrill vs. Granite State Spring Water Co., 107 Atlantic Reporter, 338.

Plaintiff had been employed by defendant for some time, repairing and driving motor trucks. While out on a business trip with a co-employee, plaintiff discovered that a brake rod on the truck which they were driving had broken, rendering it necessary to trig the wheels when the truck was to be stopped on a grade. When these men undertook to run the truck up an icy incline into a garage, plaintiff being ahead to open the doors, the machine began to slip down grade, and plaintiff started back to trig the wheels with a rock when he was injured. He after-

wards sued for damages, but failed to make out a valid claim against defendant employer. It appeared that chains had been provided for use on the truck wheels, but that plaintiff and his co-employee did not use them. Concurring in the opinion of the trial judge that there was no liability on defendant's part, the Supreme Court said:

"The plaintiff assumed the risks of his service of which he knew or which ordinary care would disclose to him. There is no evidence the defendants could have informed him of any fact material to his safety of which he was ignorant. * * * The plaintiff was acquainted with the construction and operation of motor vehicles. He knew the construction and defects of this truck, and was practiced in its operation. The defect of the brakes he knew, and also the grade and icy condition of the roadway to the garage. As to whether there was risk in attempting to run the car into the garage without using the chains provided to keep the wheels from slipping upon the ice his employers could have told him nothing he did not know. There is no evidence or presumption that they had information which he did not possess or any evidence tending to show they ought to have known he did not possess the knowledge as to truck operation, which the defendants must have understood he possessed when they hired him. The only defect alleged in the car, the insufficiency of the brakes, does not appear to have been the cause of the accident. Whether it contributed in any degree or not, the plaintiff knew all about this defect before he with co-employee attempted to run the truck in the condition in which it was up the icy grade into the garage."

Connecticut Workmen's Compensation Act Applied

The Connecticut Supreme Court of Errors has sustained the right of a widow of a laborer to an award under the Connecticut Workmen's Compensation, on account of death of her husband while attempting to ride upon a motor truck of his employer. (Firenzo vs. Richards & Co., 107 Atlantic Reporter, 563.)

The respondent company has extensive factory premises on Stamford Harbor, and claimant's husband was employed in assisting in handling incoming freight at a dock. When he finished one task he started to walk from the dock to the plant, and, as one of the company's trucks came by, he made a jump for it, as a means of saving a walk. He accidentally fell under the rear wheels and was fatally injured.

The company resisted liability under the Act, asserting that, although the injury occurred in the course of decedent's employment, it did not arise out of it in such sense to make the company liable, because he was not employed to ride on the truck. The contention, however, was ruled against the company, the court holding that it did not appear that decedent violated any instructions against riding on trucks under such circumstances. It is regarded as natural that an employee would avail himself of an opportunity to save walking between his working places by riding on his employer's vehicles, in the absence of orders to the contrary.

It is to be noted that under the Workmen's Compensation Acts negligence of an employer is not essential to liability for awards for accidents to employees in the course of their work. Nor is ordinary contributory negligence of an injured employee to bar to an award. The acts provide a limited scheme of compensation for industrial accidents quite apart from any question as to what fault caused the accident, excepting where the injured man's accident has been caused by his own serious and wilful misconduct.

Trucks and Tractors Featured at Electrical Show

NEW YORK, Oct. 2.—Electric trucks and tractors or industrial units were among the features of the New York Electrical Show. held September 24-October 4, at the Grand Central Palace which is once more engaged in industrial exhibitions. An exhibit attracting attention was the display of storage batteries by the Electric Storage Battery Co., Philadelphia. Not only was it most comprehensive, including as it did batteries for passenger and commercial car work, but was attractive to the laymen because of the many special types, manufactured by this company for war purposes. There were included batteries for battleships, submarines, radio, etc., in fact, every type of Exide was displayed with explanatory data.

Among the electric trucks shown was a 5-ton chassis, the product of the Lansden Co., Inc. It was displayed with battery compartment open to show the readily accessible, removal and replacement features of the construction.

The C-T Electric Commercial Truck Co. of America, displayed a 2-ton chassis on which was mounted a stereomotorgrapn which indicated the various industries and pursuits in which electric trucks of this make were engaged. It is suggestive of a selling window display and could be utilized by truck dealers, particularly at night. The motor and drive employed on the truck as well as a rear axle assembly were also shown.

The Walker 1000 lb. vehicle was shown with a bakery body, a neat job. The Ward Motor Vehicle Co. exhibited a 2-ton chassis, while the Baker, Rauch & Lang Co., New York, displayed two tractors or industrial units, one of which carried an electrically operated crane. The Automobile Bureau of the New York Edison Co. displayed a combination piece of fire apparatus, and all four wheels were jacked free of the floor and were driven to show the quietness of the drive.

There were the usual electrically operated tools for the mechanic and garage, these including valve grinders, bench grinders, drills, etc., and some of these were in combination. Battery steaming and vulcanizing equipment with which use is made of the heat of electricity for obtaining steam, were exhibited.

The window lighting exhibit which demonstrated the value of colors, these changing automatically, attracted the passenger car dealers, and this advertising feature could be adopted by truck dealers as it has in some of the larger cities.

L. Lawrence & Co. Expanding

L. Lawrence & Co., with main offices in the Woolworth Bldg., New York City, are owners of the patent covering the process of repairing scored cylinders. This concern began business at Newark, N. J., in 1862, making copper work for manufacturing concerns. This company also owns patents covering the repair of sand holes and blow holes in rough castings and are doing considerable volume of this work for well-known automobile concerns and founders throughout the states.

The Lawrence process for repairing scored cylinders came into prominence early in the year of 1915, and since that time this company has met with wonderful success. Besides conducting twelve branch plants, the company is represented in seventy-six cities thoughout the states, and before this year is over this company expects to be represented in every city and town of any size throughout the country. This company maintains a department for training new mechanics, who while learning the process, are never permitted to finish a job alone, until they have had sufficient experience and practice. It is the firm's policy to guarantee all work for the life of the engine. Officials state that the money spent in thoroughly training the mechanics saves both trouble and time later on.

This company announces that it will build up a national organization for the sale of automotive accessories. Their present representation will place them in an excellent position to carry on this business in conjunction with their other work.

Louisiana-Mississippi Association Meets

JACKSON, MISS., Oct. 14.—The convention and training school of the Louisiana-Mississippi Auto Trade Association was held in Jackson October 9 and 10. Problems affecting the automotive industry were discussed in detail and plans offered and suggested for building a better business everywhere.

The speakers included Senator Harrison, Governer-elect Lee M. Russell, Roger L. Harrison, highway expert of Birmingham.

Atlantic City Community Market is Supplied by Trucks

Practically All Farmers of Atlantic County, N. J., Use Trucks to Carry Produce to Market in Atlantic City. Sell Direct to Consumer

By JAMES W. COTTRELL

THE Atlantic City Community Market has for its purpose: "To give the farmers a chance to sell their produce at more than the wholesale price and at the same time to give the consumer the opportunity of buying produce at less than retail prices." This sounds like a big order to fill, and it is, but just that is being done successfully in Atlantic City, N. J.

The Market was started three years ago on a vacant lot at the end of Albany Ave., which is the terminus of the White Horse Pike from Philadelphia, Pa. The market is really an open shed with a floor raised above the ground. The farmers bring their produce in and build up a temporary wooden counter or stall and sell produce direct to consumer.

At present, the market is open three days a week, Tuesday, Thursday and Saturday, opening about 6 A. M.

Farmers only are admitted to the market and they are supposed to sell only their own grown produce. No attempt is made, however, to stop a farmer from selling some of his neighbor's produce one day and letting the neighbor do likewise another day. Many a community market or curb market has failed because of "raiding" by commission men or dealers and defeating the very purpose of the market. The present management of the Atlantic City market insures that none but farmers are admitted.

The attendance of farmers and of buyers is very good. On Saturdays during the busy season the attendance of farmers is from forty to fifty. The buyers' number is estimated at two to three thousand. Sales on Saturdays are about $5000. The advantage of the market to the farmers is that they sell their produce for an average of about $10 per load higher than in the wholesale market. By meeting the women customers in the market the farmers quickly build up a "trade" of their own, insuring a steady demand for their produce on later market days. This following of customers or good will is a very valuable asset for the farmers. In a wholesale market it is almost impossible for the farmer to establish a personal reputation for quality of his goods with the consumer.

The advantage of the market to the consumer is in the variety and the freshness of the produce offered. The prices are lower than the prevailing prices charged by retailers or hucksters.

The location of Atlantic City has brought the attention of farmers very forcibly to the time saving possibilities of trucks compared with horses.

Atlantic City is built upon an island. It is separated from the mainland by water and a wide salt marsh or the "Meadows," as it is known locally. Practically nothing is grown on the island itself. All of the farm produce must be brought in from the farms on the mainland, the nearest of which is about six miles from the market.

Trucks Save Time

The use of trucks has resulted in a great saving of time by the farmers in going to market. The question of saving time is the ruling factor in the adoption of trucks. One of the farmers, and his case is typical, said that he could not stand driving to Atlantic City with horses two or three nights a week to sell his produce, and working all day to grow it, too. He said quite emphatically: "I had to buy a truck or quit farming."

The greater speed of the truck allows farmers who were too far away to drive horses to market to get there in a short time. Many farmers are making a trip of 20 miles to Atlantic City with a truck and making better time than the farmers nearest to Atlantic City can make with horses.

How thoroughly the truck dominates the field is shown by the fact that of the farmers coming regularly to the market all use trucks except one.

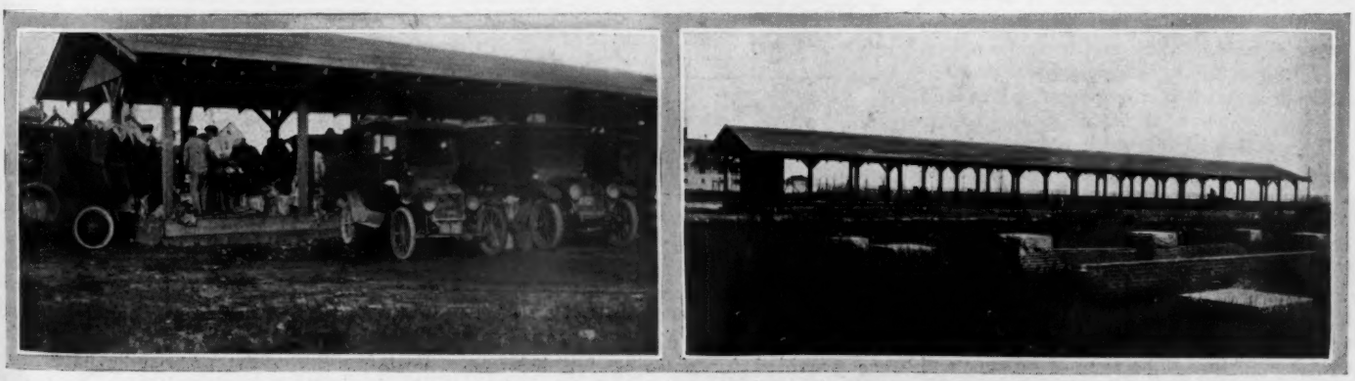
The loads carried are bulky rather than heavy, and the weight carried on any one trip is not large. Trucks of ½, ¾ and 1-ton capacity are used and also a number of remodeled touring cars. Pneumatic tires are universal. The trucks are driven at a good speed on the road; 20 to 25 m.p.h. is the rule for the smaller ones.

The use of remodelled touring cars makes an opening for the disposal, by dealers, of trade-in cars. It is not easy to sell a farmer a second-hand car. He is absolutely dependent on the one car and puts reliability first in a car's virtues. But if the car be thoroughly overhauled and sold under a guarantee as to condition, by a reliable dealer, the farmer will pay a reasonable price for it which will cover all of the expense of putting it in shape. The older model cars, heavily built and somewhat out of date in appearance but having lots of good service in them, if equipped with bodies, can be sold to farmers at fair prices.

The ease with which Atlantic City farmers have overcome the six-mile handicap on selling in Atlantic City shows an opportunity elsewhere to broaden the field or area supplying produce to cities.

Dealers who study local conditions and study the marketing and distribution of farm products in their territory can show the farmers how to better the sale of their produce by trucking it to market. They can get orders which another dealer offering simply a truck will miss.

Farmers are keenly interested in better methods of distributing and selling their produce. They mean to get, if possible, a larger percentage of the consumer's dollar than ever before. If you can couple up your sales arguments with facts bearing on this problem you will find the farmer more than "just interested."



Two Views of the Atlantic City Community Market to Which the Jersey Farmer Transport Their Produce in Order to Sell Direct to the Consumer, Thus Dispensing With the Middleman's Profit

Truck Cost Records for Storage Warehouses

An Outlined Composite of a Good Cost System

By H. WEYSZ

THE storage warehouse business is peculiar—so much so that comparatively few new enterprises are being founded in this field. Based as it is largely upon capital which is tied up in real estate, its profits are relatively small and, so to speak, slow. This partly accounts for the departure of most storage warehouses in the big cities from a complete storage business; branching into the furniture-moving line; but the high overhead expense of the storage business reacts upon this department also, and therefore the strictest economy of operation is necessary to produce a fair margin of profit. At any rate, the capital involved in all transactions results in considerable amounts, even in matters of small percentage, consequently profitable results cannot be obtained except by efficient, scientific work.

In the moving business low cost, speed, minimum of accidents and reliability makes for efficiency. To determine the degree in which each vehicle and driver comes up to the necessary standard, exact records of the work and operating cost of the outfits must be kept, which enable the owner both to judge of performance and to make necessary improvements of equipment and operating system at the proper place and time.

The following is a simple cost-keeping system, compiled from the successful features of a number of systems employed by New York City firms. This cost system includes four simple blanks, illustrated herewith.

Fig. (A) is the daily record, on which the details of every moving trip are entered, and which is filled in by the driver of the machine. The time of leaving and returning to the business is entered, as is the length of time spent in loading and unloading and the total standing time. The difference between the latter and the absence from the warehouse is, of course, the moving time. The amounts of gasoline and lubricant drawn during the day are recorded also. If the car is held up all day or part of it on account of repairs, the details of this fact, the nature of the repair, as well as the parts needed for it are entered, together with the total cost and time required for the repair work. The last column of the sheet is a space for other remarks, to be filled in by the driver or superintendent.

CAR No._____ DATE_____ 19____ DRIVER_____ HELPER_____

TRIP NO.	ADDRESSES	CHECKED OUT	CHECKED IN	TIME SPENT LOADING	TIME SPENT UNLOD	MILES	HOURS STANDING	GAS	OIL ETC.	REPAIRS, EQUIP'T, ETC	COST	MISCELLANEOUS

CAR No._____ MONTH_____ 19____ MONTHLY RECORD TOTAL EXPENSE $_____

DAY	MILES	HOURS	HOURS TRAVELED	GAS $	OIL $	REPAIR $	GARAGE $	EQUIPMENT $	OVERHEAD $	DRIVER $	HELPER $	TOTAL $	COST PER MILE
1													
2													
3													
4													
29													
30													
31													

TRANSFERRED AND TOTALED BY_____ CHECKED BY_____

From Top to Bottom Figs. A and B Respectively

At the end of the month, or, still better, during its course, all accidents, repairs, etc., are entered on the record (B). Making a monthly history of all expense items referring to the truck, excepting its regular operation, service and cost, always obtainable. Spaces are provided for entering full information, including the dates, nature of repairs and troubles, materials, labor and cost. This method also allows extra expenses to be easily added at the end of every thirty days and are always available for inclusion into the more comprehensive general records.

To obtain these records all information from records (A) and (B) is combined in an individual truck record (C), figured monthly. This sheet calls for no further explanation except that the garage expense is pro-rated from the total bill for all the trucks, the overhead being proportioned in a corresponding manner from the general expense. Taking the total cost obtained by adding all these items for each day, the monthly total expense is calculated by adding daily totals, and the mile cost by averaging the daily figures in that column. The clerk fills out this record, after which it is checked and signed by the foreman for future reference.

The same sheet may also be used for calculating the cost and average figures for all the cars composing the outfit of the concern. In this case the number of each case is entered in the "Day" column and the monthly totals, as well as the monthly average mile cost, which is listed in spaces corresponding to the different items.

The fourth sheet (D) serves for the purpose of checking up the time entries made by the drivers on forms (A). This blank is also a monthly affair and is filled in by the doorman or whoever is in a position to watch the leaving and returning of the several trucks.

This simple system covers practically every phase of cost-keeping needed in the moving business, and intelligent study of the records will enable a foreman or superintendent to place, with mathematical exactness, any blame wherever it is due and to determine any improvements which are necessary.

Of course, there are always variations in local conditions and in the nature of individual enterprises, and it would be foolish to look upon this system, or any other system, as an ironclad pattern. The owner or superintendent who is best familiar with the specific nature of the business, will find it easy to make such changes in this system as to render it most serviceable to his enterprise.

CAR No._____ MONTHLY TROUBLE AND REPAIR MONTH OF_____ 19____

DATE	NATURE OF REPAIR	MATERIAL	COST	LABOR (Hours)	COST	DATE	TROUBLE

_____FOREMAN.

CHECKING SHEET MONTH OF_____ 19____

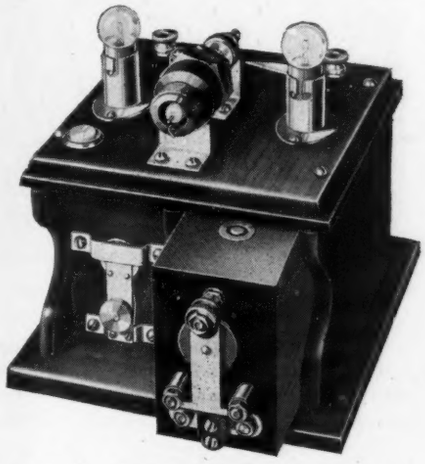
DAY	CAR 1				CAR 2				CAR 3				CAR 4				CAR 5				CAR 6				CAR 7				CAR 8				
	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1																																	
2																																	
3																																	
29																																	
30																																	
31																																	

From Top to Bottom Figs. C and D Respectively

TRUCK EQUIPMENT AND APPLIANCES

Cylinder Compression Tester

The Casey-Hudson Co., 357 E. Ohio St., Chicago, Ill., has recently brought out a new device to permit the use of the Schrader or Twitchell tire gages for testing in succession the compression of each cylinder of an engine. It is known as the Duplex cylinder compression



Tester for Lamps, Plugs, Coil Units, etc.
A new device to test the various electrical mechanisms of an accessory shop is being furnished free to dealers in Liberty Spark Plugs.

tester and will fit any cylinder with a ½-in. or ⅞-in. spark plug, and will also accommodate Schrader or Twitchell gages. It enables any one to determine the cylinders having low compression and indicates exactly the locality of engine weakness and where to apply the remedy to regain the loss of power. This device sells for $1.

The International Precision Governor

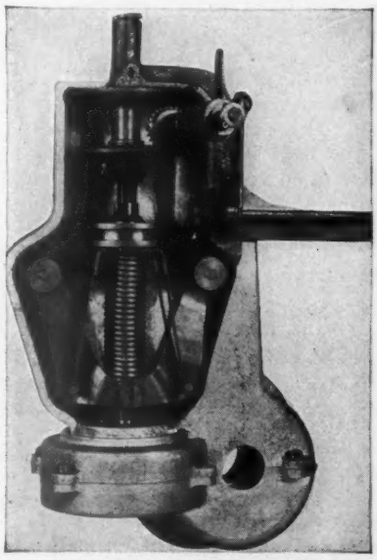
The Precision Governor is a mechanism devised to serve as a gasoline engine controller, which will hold the engine to a predetermined speed regardless of load, carburetor setting, ignition adjustment, quality of gasoline, temperature or humidity. This device is said to embody two entirely new mechanical principles, as it not only controls the engine speed positively, but also selects the proper throttle opening necessary to bring the engine to a desired speed.

It is further claimed that this device holds the engine to 1-10 of 1 per cent. of the rated speed at all times, and under all loads, from idling to the full capacity of the engine. As long as carburetion is sufficient for the engine to carry its load the governor will hold the speed constant.

An example of how quickly the engine assumes normal with a precision governor attached: a stop watch test showed that when equipped with a Precision a 30-hp. engine idling at normal speed would regain the same normal speed within two seconds after full loads when thrown out.

Any change in engine speed varies the position of the crank, which throws the double spiral assembly either up or down. At normal speed, this assembly remains in a central position, but when the normal speed is departed from either the upper or lower force-spiral engages the toothed wheel shown in the accompanying illustration, and so rotates the threader shaft. This results in either closing or opening the engine throttle, the amount necessary to regain normal speed. Inasmuch as the operation of the screw feed is too sluggish to control rapid variations of load, an additional motion is provided through a three-point lever. When the slotted disc is raised or lowered by the action of the flyball, the engine throttle is moved immediately in the direction necessary to make a quick control of engine speed, and thereafter the feeding mechanism, before mentioned, comes into effect and selects the proper throttle opening to maintain the desired speed.

Precision Governors are set up and tested at the factory and need no adjustment nor attention after being attached. The design is rugged and can be shipped for mounting up any engine without liability of damage or disarrangement.



Cutaway View of the International Precision Governor
This governor holds the engine to the predetermined speed under all conditions, regardless of load, carburetor setting and ignition adjustment.

This governor is made by the International Radio Telegraph Co., 326 Broadway, New York City. The accompanying illustration shows the construction and gives an idea of the way the governor operates.

New Hydroburner

A new device to admit moist air to the intake manifold is being manufactured by the Drexell Machine Co., 115

Graduated Moist-Air Device
The dial wheel is numbered so that the device can be regulated to the point of best performance.

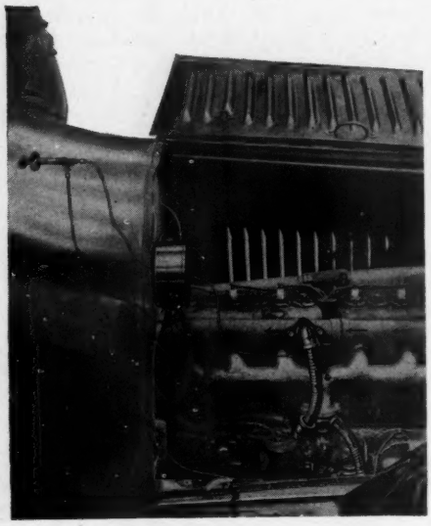
E. So. Water St., Chicago, Ill. Its fundamental purpose is to prevent the formation of carbon in the cylinder and in the cumbustion chamber, but it is also claimed to increase the power, speed and flexibility of the engine.

The device itself contains an automatic valve and a diaphragm acting as a dash pot in a water chamber, and is so arranged that the valve, which is normally closed, is timed automatically not to open until 15 seconds after the engine has been started. The maker claims this eliminates the trouble experienced in starting an engine with a humidifier attached. The water chamber of the device is kept constantly charged by condensed vapor from the radiator. The dial wheel on the top is numbered from 1 to 9, and it can be secured at the point of best engine performance.

The instrument is attached to the manifold with ⅛-in. standard pipe thread. A 5-16-in. copper tube extends from the instrument through the radiator to the underside of the filling cap. A check valve with a light spring prevents water from getting into the pipe when filling the radiator. The use of the rubber gasket, furnished with the outfit, makes it unnecessary to solder the joint formed by the tube passing through the radiator tank. This device retails at $5.50.

New Device to Permit the Use of Low Grade Fuel

The Allison Burner Co., Pioneer Bldg., Seattle, Wash., has placed on the market the Allison low grade fuel burner. This outfit primes the engine with gasoline to assist starting prior to the admission of a low grade fuel, the control of which is also automatically regulated by the carburetor.



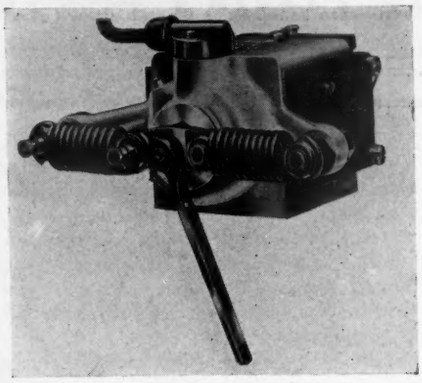
Allison Low Grade Fuel Burner

Note flexible fireproof hose through which a part of the exhaust gas passes, and priming tank located against the dash.

The accompanying illustration shows the burner or burner block installed between the carburetor and intake manifold. This device receives a fuel vapor from the carburetor and the vapor in passing through the heating flanges of this burner block is said to become a dry and highly explosive gas. The burner block will heat up quickly and also retain heat well. Included in the equipment of this outfit is a flexible metallic fireproof hose; a spoon flame transmitter which catches the hot explosion and diverts a certain amount of the burner; an auxiliary priming tank; a needle-valve dash priming pump; an inlet manifold spray nozzle and all connecting fixtures. A portion of the exhaust is directed to the burner and then to the air through the flexible hose beneath. The priming tank is located beneath the hood against the dash with the priming pump on the dash. This outfit is claimed to greatly increase the efficiency of the engine and reduce the amount of carbon formation. These outfits are made for all trucks and accordingly vary in price from $20 to $32.50.

Bosch Develops New High-Tension Magneto

The latest type Bosch magneto to be offered to the trade is the AB 33 Ed. 1, a high tension magneto designed to provide efficient ignition at low operating speed. It is especially adaptable for all stationary liquid fuel engines using gasoline, kerosene, distillate, motor-spirits,



Bosch AB-33 Ed. I Magneto, Showing Tripping Lever

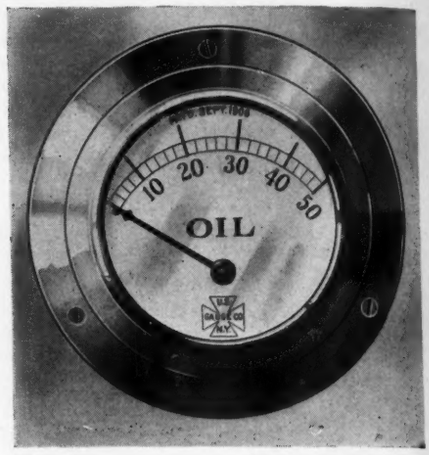
tops, etc. The American Bosch Magneto Corp., of Springfield, Mass., is the manufacturer.

The rocking of the armature, between the poles of the magnet, represents the mechanical energy that transforms into electrical energy, which method provides the high tension spark in this new model. The rocking movement of the armature is brought about by the action of the tripping device against the trip lever, the latter being shown in the accompanying illustration. This tripping device moves the armature which is brought about by the action of springs quickly returning when the trip lever is released. This gives a high rotative speed to the armature, regardless of the engine speed.

The magneto frame is cast of aluminum. The pole shoes and drive shaft bearing are cast in the magneto frame. The rear end plate is of cast iron and acts as a bearing for the armature and also acts as a pole piece for the two magnets, which are both screwed to the rear end plate and to the pole shoes of the magneto frame. The rear end plate also has wick feed for lubrication. The interrupter is standard Bosch type, anti-clockwise, points being of special material. The magnets are permanent and of the flat type. The grounding brush consists of a brass holder in which is placed a carbon brush and spring. It is located at the rear end of the top face of the magneto frame, in front of the oil cup.

New United States Pressure Gages

The United States Gauge Co., 67 Wall St., New York City, is manufacturing various types of gages for use in all lines of the automotive industry. They are simple in construction and have very few parts, and operate on the Bourdon tube principle. They are made in two general types—one with a brass case and the other with a pressed steel, nickel plated ring. The springs used in the standard pressure of vacuum gages of the United States line are claimed not to set while in or out of service and that the life will generally equal the life of the appartus upon which they are used. These gages have independent, non-corrosive movements mounted direct on the gage socket. They cannot be thrown out of adjustment when the gage is screwed into position. The teeth in the segments and pinions are cut on special precision machinery.



United States Oil Gage

In addition to the standard pressure and vacuum gages are tire pump pressure gages, sight feed gages, compressometer gage and the Invincible tire tester.

New Tube Repair Outfit

The Cincinnati Auto Specialty Co., Cincinnati, Ohio, has announced the addition of a new commodity to its list of useful equipment, the Stik-Tite Lily-White Tube Repair Outfit. This outfit, which is sold complete with cement and buffer in an air-tight screw-cap case, is sold in four sizes. The patch is claimed to have an unusually long stretch and will adhere tightly when properly applied. No chemicals or coloring matter are used in this product. The number 55 size, illustrated herewith, consists of a sheet of patching material, 3 x 9 in., a metal tube buffer and cement, all in an air-tight case. The price is $.50 complete.

No. 105 differs only in size, having a patching sheet 3 x 20 in. The price is $1.

Stik-Tite Lady White Tube Repair Outfit.

No. 155 includes a patching sheet 6 x 18 in., an extra large tube of cement, a buffer, and an air-tight case, price $1.50. No. 505 is a special shop size, 20 x 18 in., of patching material, three large tubes of cement, three metal buffers, enclosed in a strong cardboard box. This sells for $4.

New Governor for Trucks and Tractors Operated by Suction

A new engine governor for use on trucks and tractors is being manufactured by the United Parts Co., of Milwaukee, Wis. It is known as the Motor Master and is operated by the suction of the intake below the throttle. It is said not to be affected by the sudden rise of suction when the throttle is closed. The action of the governor is claimed to keep the momentum of the flywheel practically constant, assuring a steady torque on the drive shaft. It has but three moving parts, operating in ball bearings, entirely enclosed. Being suction operated, it is controlled according to the load.

The body is made of aluminum with wearing parts of steel and the butterfly is set in ball bearings. The device is designed to be used on any standard make of carburetor and is furnished regularly with standard S. A. E. flanges. It is simply bolted in place and connected to the throttle rod. The butterfly throttle is indirectly connected to the throttle valve by link or lever, the fulcrum of which is changed by advancing or retarding the throttle lever. One end of this link is connected to the piston rod, which is actuated by suction; the other end is connected to the throttle rod shaft through a bell crank. The action of the suction closes the butterfly valve and is balanced by a spring, the tension of which is adjustable.

Motor Master
Body is aluminum and fitted with S. A. E. flanges

It will thus be seen that the suction between the throttle and the intake valve is influenced by two conditions, namely, the speed of the engine or the amount of gas used, and the second by the opening of the throttle.

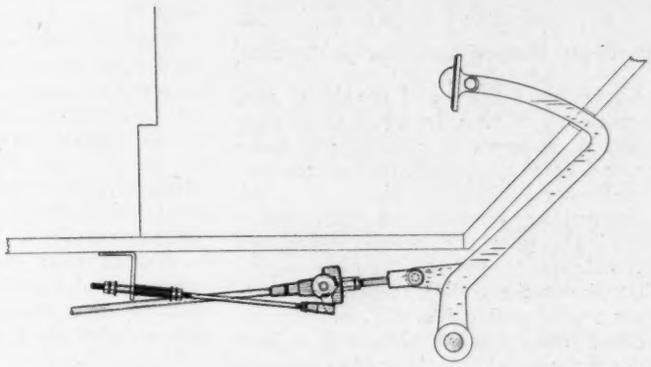
The Automatic Brake Adjuster

The inconvenience of adjusting brakes on a truck is claimed to be entirely eliminated by attaching the Automatic Brake Adjuster. It adjusts with every one thousandth of an inch wear of the brake lining, and does it automatically until the brake linings are entirely worn out. It requires no attention whatever if it was properly attached originally.

By the use of this device the brake pedal can be designed with a greater ratio of leverage for an easy operating brake.

The Automatic Brake Adjuster is installed in the brake rod from the brake pedal, or another design, with a forked head, is mounted at the junction of brake pedal. The operation of the Automatic Brake Adjuster is as follows:

When the foot exerts pressure on the brake pedal, the adjuster with the automatic functioning rod are all moved forward with the brake rod, to a predetermined distance, which is the ordinary movement of the brake pedal in applying the brakes. If the brakes are worn and loose, the brake pedal continues to move, thereby engaging the stop nut with the stationary bracket and checking the movement of the automatic functioning rod, allowing a cover described as 252 to oscillate and engage a spring pawl which clicks over a tooth on a ratchet wheel, that rotates the sleeve on the rod (which is threaded and screwed into the sleeve), occurring at the time the brakes are released, and thereby taking up the slack in the brakes.



Automatic Brake Adjuster Permits of Adjustment to One-Thousandth of an Inch.

On the opposite side from the cover 252 is a small button, riveted to a pawl, with a spring for preventing any back lash if occasion requires making it absolutely foolproof. Assuming now that the brake bands are to be relined, to fully release and get all slack possible, it is only necessary to pull button out and turn slightly, turn handle of cover 252 parallel with sleeve, then unscrew sleeve until threads on brake rod are exposed. After relining the brake bands, to adjust them, it is only necessary to replace button in the guide pin and turn handle back into position, then work the brake pedal and the brakes will automatically become adjusted properly. No part in the adjuster will get out of order and prevent the brakes from functioning properly.

The average pull test on the Automatic Brake Adjuster with an aluminum body was 6,780 lb. before breaking.

The main parts are: body of aluminum; head of brass or bronze, made with plain hexagon end, tapped ⅜-in.—16 U. S. Standard thread or tapped 7-16-in.—14 U. S. standard thread and 5-16-in.—24 S. A. E. standard thread for installations having 5-16-in. brake rod; also a forked head for mounting at junction of brake pedal; cover No. 252, brass with a steel spring pawl riveted on; sleeve, Parker rust proofed steel, made with ⅜-in.—16 U. S. standard tap, or with 7-16-in.—14 U. S. standard tap. The sleeve is extended on the exposed end for the purpose of protecting the threads on the brake rod, on the other end of sleeve the ratchet wheel is securely riveted. Sleeves are not tapped less than ⅜-in. on account of the depth of thread cut on the smaller brake rods because this tends to weaken same, therefore a reducing coupling is supplied for the purpose of joining to the 5-16-in. rod. The back lash mechanism is a button of steel with pawl of steel. All parts are accurately machined and fitted to gages.

Each adjuster is thoroughly tested by a motor driven machine, especially designed for this purpose, and then oiled and run in before being packed for shipment. It retails at $8 plus war tax and installation charges.

The Cole Motor Car Company is equipping all of its present models with this device. It is patented and manufactured by The Dearborn Manufacturing Company, Cleveland, Ohio.

Griffin Multiplex Spark Plug

The Griffin Mfg. Co., 113 State St., Boston, Mass., is manufacturing the Multiplex spark plug. Combined with it is a primer which has a detachable cup. It also provides means for testing the compression, as an ordinary tire gage can be used to secure the pounds pressure. The maker also states this can be used as an air pump, by disconnecting the circuit of one plug and attaching in its place a hose. The price of these plugs is $2.

Combination Spark Plug

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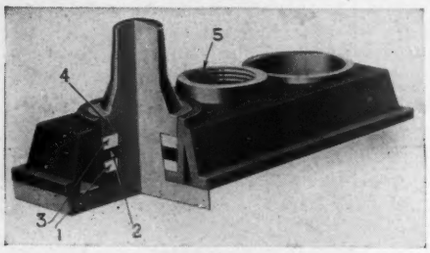

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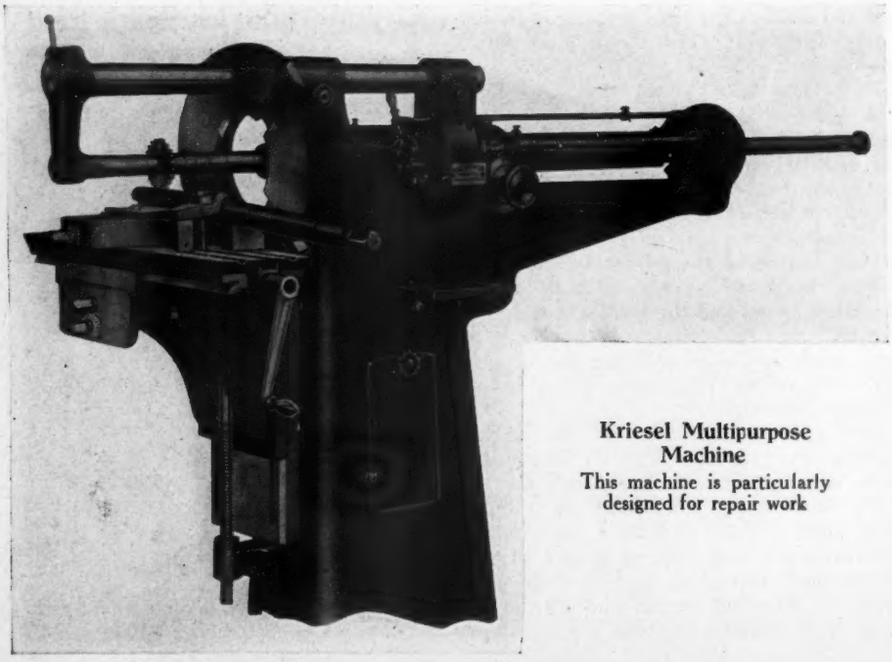

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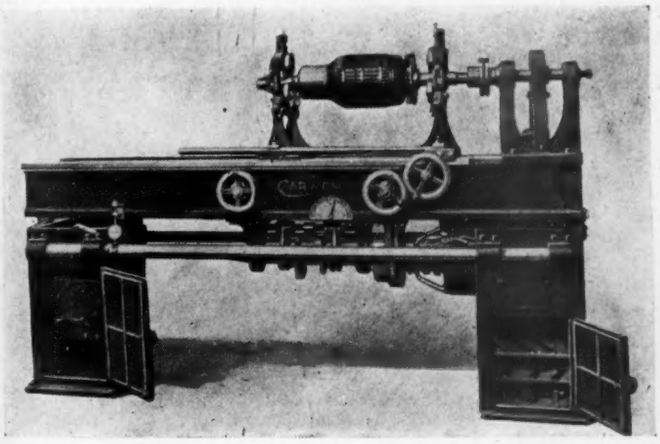

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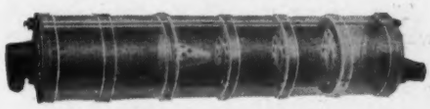

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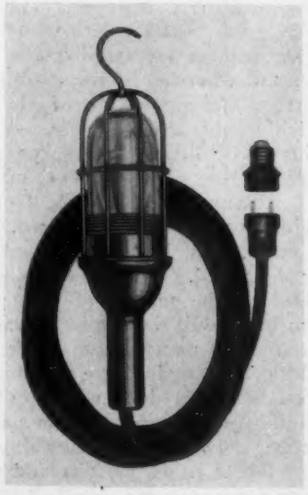

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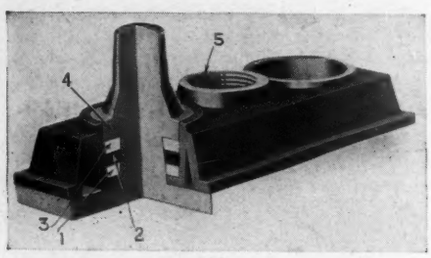

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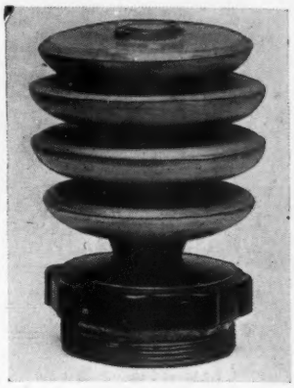

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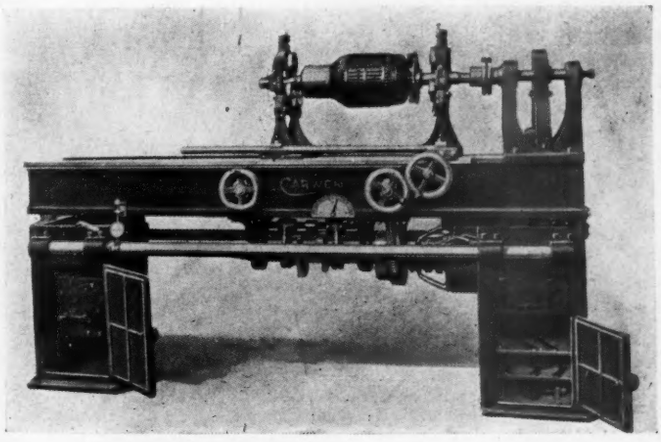

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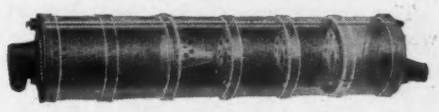

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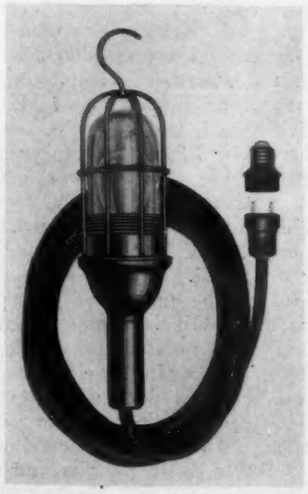

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Twin City Sixteen-Valve Engine for Tractor Service

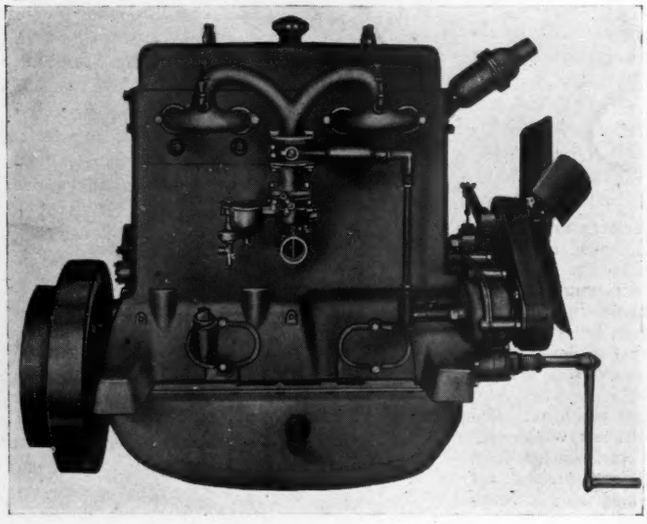
THE Minneapolis Steel & Machinery Co., of Minneapolis, Minn., have again augmented the Twin City Line. The new addition is a four-cylinder heavy-duty engine having a 4½-in. bore and 6 in. stroke. It is especially designed for tractor work. The two exhaust valves, which quickly rids the combustion chamber of all burned gases and also a like number of intake valves which afford quick entrance for fresh incoming fuel-mixture, are worthy features of this new engine. It is also featured by the fact that it has removable cylinder sleeves, which saves time in replacement and also cost of maintenance. The sleeves are machined on both sides.

The engine was so designed that all wearing parts are accessible and removable. These parts include the cylinder walls, crankshaft and connecting rod bearings, camshaft bearings, magneto, fan-drive shaft, rocker arm bushings, etc. The general accessibility has been incorporated wherever it is possible and adjustments and inspection of all parts are quickly and easily made. Valves are adjusted by lifting the top cover by handholes in the side of the crankcase. The oil pressure pump, at the front of the engine, can be easily removed.

The crankshaft is heat treated and counter balanced. Lubrication is by force feed to the main and connecting rod bearings. Oil is drawn from the front to the oil pump, from there it is pumped to each main bearing, continuing through an oil duct which extends from each main bearing, to the nearest connecting rod bearing. The lubrication of cylinder walls, pistons and wrist pins is by splash.

The cooling system includes a centrifugal water pump which draws the water out of the radiator, forces it through the cylinder water-jacket and then passes out through the water-manifold at the top of the cylinder block. It is then directed through a Syphon thermostatic valve back to the radiator. As the thermostatic valve is operated by temperature changes, it is not affected by the flow of water. The water-jackets around the valve seats and combustion chambers are exceptionally large.

Bore .....4¼ in.
Stroke .....6 in.
No. of Cylinders 4
Crankcase (plain or with Bell-Housing) and Cylinder Jackets cast in one piece.
Cylinders .....Removable Sleeve
No. of Crankshaft Bearings 3
Size of Rear Crankshaft Bearing .....2¾ x 4
Size of Center Crankshaft Bearing .....2⅝ x 2⅝
Size of Front Crankshaft Bearing .....2¼ x 3
Size of Crank Pin .....2⅜ x 2⅞
No. of Camshafts 2
No. of Bearings on Camshaft 3
Size of Rear Camshaft Bearing, 1¼ x 2¼
Size of Center Camshaft Bearing .....1⅞ x 2¼
Size of Front Camshaft Bearing .....1 15-16 x 2 3-16
Size of Wrist Pin Bearing in Rod .....1¼ x 2⅛
Length of Connecting Rod .....12 in.
Length of Piston 5 3-32
No. of Rings per Piston 4
Width of Piston Ring .....¼
Timing Gear Face Width 1 3-16
Cylinder Head .....Removable
Valve Location .....In Head
Diameter of Intake and Exhaust Ports 1¼
No. of Valves per Cylinder 4
No. of Push Rods 8
Size of Push Rod .....⅜ hollow
Type of Tappets .....Mushroom
No. of Tappets 8
Lubrication .....Pressure Feed
Oil Capacity .....3 gal.
Lubrication of Main Bearings, Pressure
Lubrication of Crank Pins, Pressure through drilled holes
Lubrication of Cylinder, Spray from crank pin
Lubrication of Timing Gears, Overflow from pump
Type of Lubricating Pump .....Gear
Weight of Flywheel and Equipment .....910 lb.



New Twin City Engine Has a 4½-Inch Bore and a 6-Inch Stroke. Accessibility is the Keynote of This Design.

Hicken's Sod-Tor-Lite

A new device combining a soldering iron, torch and light is being manufactured by the B. E. Hicken Sod-Tor-Lite Co., Prairie Hill, Mo. The No. 2 set, which retails at $18, is the most popular, being extremely useful to the garages and electrical workers. Since the heat is inside, the tinning lasts much longer and a constant heat can be kept at the copper point. It is portable and can be taken and used anywhere, even out of doors in high wind. The barrels are made of one-piece nickel plated steel, the brass parts of which are polished. This No. 2 set is furnished with three copper points, 6 ft. of hose, a tank union and the torch proper.

This tool is connected to an acetylene gas tank and ignited. As a torch, the flame can be regulated to any heat. It will melt any common metal, and can be used for light brazing and hard soldering. It can also be used as a torch and can be adjusted for such use by turning the regulator, which is conveniently placed at the left top of the handle.

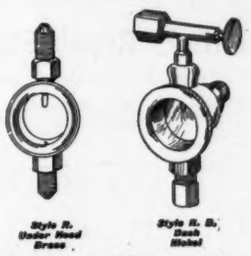
This Outfit Includes a Self-Heating Soldering Iron, Torch and Light

Whitney Gas Humidifiers

The Whitney Gas Humidifiers, designed to supply the engine with sufficient moisture to give it increased power, are now being manufactured with three styles of cranks and two styles of gages, intended to stretch its adaptability over a greater field. This product, which is manufactured by the R. S. Whitney Mfg. Co., 74 Nichols St., Lewiston, Me., provides for the introduction of a standardized amount of vapor into the intake manifold. This is claimed to lower fuel consumption and give more perfect combustion. The opening of the needle valve allows the engine to be flushed with water vapor which will cleanse it of any carbon that might be therein.

Within the humidifier is an automatic

shut-off valve, at low water level, to check the air from passing to the engine in case the water tank becomes empty. The two gages, either of which may be hood or dash, readily show the rate of feed. The dash type gage is the most practical, as adjustment can be made from the driver's seat. No. 1 and



The Whitney Sight-Feed Gages
One sight-feed gage is located under the hood and the other on the dash.

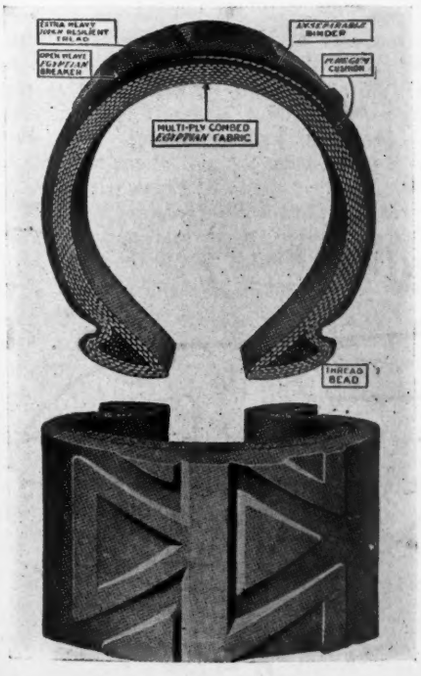
No. 3 humidifiers sell at $8.50, $9.50 west of the Rocky Mountains. No. 2 sells at $10.50, $11.50 west of the Rocky Mountains. The Style R sight feed gage, that is the underhood type, sells at $3, $3.50 west of the Rocky Mountains, and the dash type sells at $5.50, $6 west of the Rocky Mountains.

Gordon Tires Have Effective Treads

The Gordon Tire & Rubber Co., Canton, Ohio, is offering to the trade a tire furnished with two new treads. One tread known as the "Lotraction" is designed to replace the smooth treads on the front wheels. The other tread is so constructed to insure perfect road contact and is known as the Triangle tread.

The tread and side wall of this tire is made of a tough rubber which is welded to the carcass by a primary side wall of pure gum together with a breaker strip frictioned with a tenacious compound said to absorb any shocks to which the tires may be subjected. The carcass is made of long fibred, gum-fused fabric.

The construction is well balanced and the carcass is claimed to last as long as the tread. The company guarantees the larger sizes for 5000 miles and the smaller for 6000.



Two Views of New Gordon Tire Section

Lubricators for Chassis

The Madison-Kipp Corp., of Madison, Wis., has recently placed on the market the Oil-Kipps, a new form of oil containers for various parts of the chassis, the spring shackles, steering gear, steering apparatus and upper joints, etc. They consist of a reservoir with a spring retained cap, the reservoir being kept filled with oil. The plunger, kept seated by the spring, prevents oil from passing out of the reservoir. When the plunger is drawn out, oil flows into the cylinders

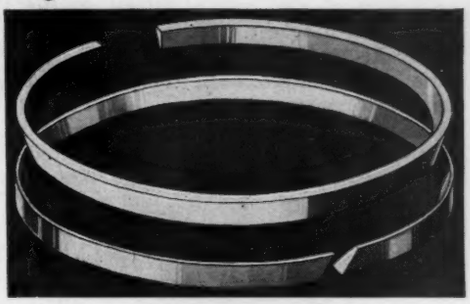
The Oil-Kipps
At the left is the vertical type and below is the horizontal type.

and is forced to the part needing lubrication by the plunger movement inwards. The reservoir need be filled but once in a while, as each filling of the reservoir provides 20 or more shots.

Thus the various parts of the chassis can be lubricated by walking around and pulling out upon each one of these Oil-Kipps and allowing the plunger to spring back.

The Yale Piston Rings

The Yale Piston Rings are manufactured by the Yale Piston Ring Co., Inc., 560 West 36th St., New York City. The top piece is of steel and furnishes a live, flexible spring to expand the outer cast iron member against the cylinder wall. This ring is designed to take up wear and press against both sides of the grooves as well. The inner ring also will seal the gap in the outer ring and prevent accumulation of oil or carbon in the groove. They are especially well adapted to the aluminum piston, as they expand with it. The two members of this ring have double spaces pressing one against the other, which causes a side-wise pressure of the ring against



Yale Piston Rings

the side of the groove, thus removing the chance of leakage behind the ring. The prices range from $.80 to $1.30 each from the 3-in. to the 5-in.

New Wayne Tire Pump Features

The Wayne Type B hand operated tire pump possesses several excellent features. It has, for example, the steel tube handle, welded to the piston rod, making an indestructible unit. There are no nuts on this handle to chafe the hands of the user and the fact that the welding process is used does away with the possibility of the handle breaking loose or weakening through hard usage. The shoulder seating method of attaching the cylinder to the base is another feature. The plug is brazed into the bottom of the cylinder and then drawn by a large screw, into the base, down upon a gasket impregnated with aphaltum. This makes an air-tight connection, eliminating that threaded connection which generally rusts and eventually breaks off.

There are in fact no threaded connections on the Wayne Type B. Everything on the pump is built for durability.

The New Wayne Type B Hand Tire Pump, Which Has Several Excellent Features.

The cylinder is of steel, the rubber hose of heavy grade, the coupling large and easily handled, the piston large and strong, the base heavy. It is manufactured by Wayne Engineering Co., Honesdale, Pa.

Rainy Racer Windshield Cleaner

A new device designed to prevent the collection of rain and moisture on the windshield has been brought out by the Rainy Racer Co., 3 S. Redwood St., Baltimore, Md. It resembles the blackboard eraser in construction and is used only after rain has commenced and a small amount of moisture has been deposited on the windshield. The maker states

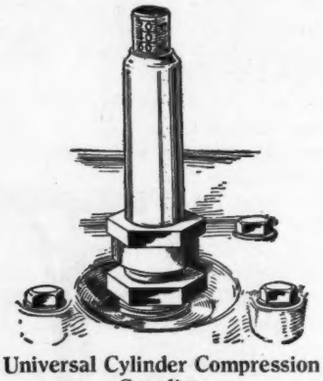
Rainy Racer

The windshield glass is rubbed with this device after it has become moistened.

that there is a chemical in the wick which is released through a reaction when it comes in contact with water. This results in a thin invisible transparent film, which will prevent the formation of globules of water. The price is $1.

Universal Cylinder Compression Coupling

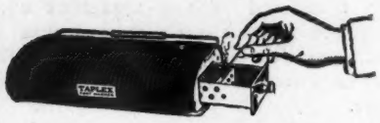
This is a new device put on the market by the Gray-Heath Co., 1440 Michigan Ave., Chicago, Ill. It is known as the Universal Cylinder Compression Coupling, used to test the compression of the cylinders by the use of a tire pressure gage. It will fit the ½-in. standard and the ⅞-in. A. L. A. M. plug holes. The price is $1.



Universal Cylinder Compression Coupling

Taplex Manifold and Radiator Heater

The Taplex Heaters, which utilize a fuel composition that is smokeless, flameless and odorless, and are manufactured by the Taplex Corp., 87 35th St. Brooklyn, N. Y., are now being produced in styles suitable to heat the manifold of the Ford truck, and also to heat the radiator of any make of truck. This heater is such that it can be readily attached to the Ford manifold, and if it is utilized each night, the starting of the engine the following morning is greatly facilitated regardless of low winter temperature. It is made of japanned steel and retails for $3.50. Each stick of fuel will burn 12 hours and 12 sticks are sold for $1.

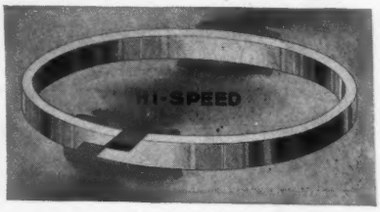


One of the Taplex Heaters

All heaters are made of the same material and are placed in the same section, the front of the radiator, regardless of the type of truck.

Hi-Speed One-Piece Ring

A new one piece ring with a step cut diagonally is being produced by the Continental Piston Ring Co., of Memphis, Tenn. This ring is stated to prevent gasoline from passing into the crankcase or oil pan, and to increase the power of the engine. Leakage is declared to be obviated because the diagonal step cut forces the ring to travel spirally in the piston groove. It will also prevent the accumulation of carbon under the ring. It is manufactured nearly concentric of gray cast iron. It is individually cast and is sold in over-size as well as standard.

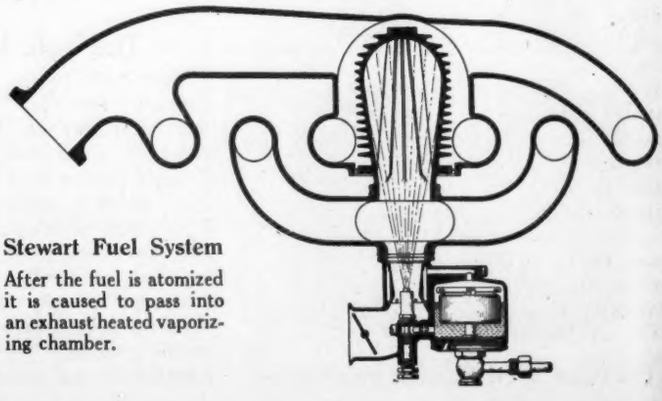


The Hi-Speed Piston Ring

Stewart Heavy Fuel System for Trucks and Tractors

Production has commenced on the Stewart Heavy Fuel System for truck and tractor service. This outfit will accommodate gasoline, alcohol, kerosene and the West coast distillates. The fuel is finely divided mechanically at the carburetor spraying nozzle, at which point extreme high velocity being impressed upon the fuel globules. From this point they are caused to pass into the exhaust heated vaporizing chamber, where the fuel is stated to be thoroughly vaporized. The maker states the temperature of the mixture is at that minimum which is consistent with the realization of perfect charge quality and proper distribution.

This system has been brought out by the Stewart-Warner Speedometer Corp., of Chicago.



Stewart Fuel System

After the fuel is atomized it is caused to pass into an exhaust heated vaporizing chamber.

A Battery Repair Stand

A new device particularly useful in a battery service station is being manufactured by the Continental Auto Parts Co., of Knightstown, Ind. It is a stand upon which the battery to be repaired can be placed. This stand is mounted on ball bearings and can be revolved and locked in any position. The top is made of one piece of hardwood, 1½ x 7 x 10 in., which eliminates the danger of short circuit and so treated as not to be affected by acids. It is finished in natural wood color and black enamel. The price is $4.

The Continental Battery Stand

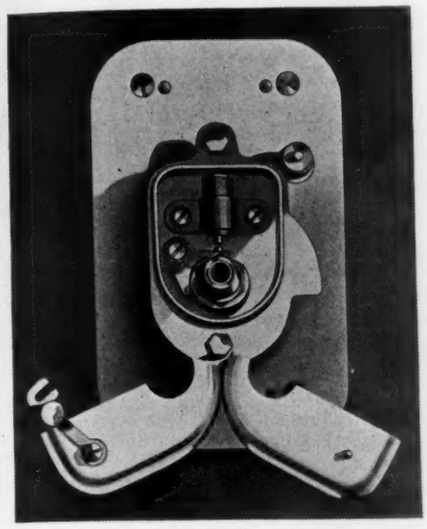
A New Tire Gage Announces Correct Pressure

The Hartley Screw Co., 132 Central Ave., Newark, N. J., is offering to the trade the Hilton pressure gage. The feature of this is that it emits a buzz, indicating that the desired pressure has been reached, thereby preventing over or under inflation of the tire.

This device is attached to the tire pump hose and screwed on to the tire valve and set at the pressure desired. When that pressure is reached the valve will blow off and buzz as long as the pressure is maintained. It is impossible to have too much pressure in the tire as it will escape through the safety valve. This valve is made of brass with a steel spring, a fibre washer connecting to the Schrader valve and a small specially prepared rubber disc rests on the valve seat. The price is $2.

New Rogers Magneto

Because of a greatly increased magnetic area and a hotter spark, the maker of the Rogers magneto claims that with its use a quicker acceleration and more power will be obtained, the engine will operate more smoothly with a big reduction in fuel consumption. The Vita Manufacturing Co., 730 Williamson Bldg., Cleveland, Ohio, maker of the Rogers magneto, has also extended the use of the magneto system of ignition to include all engines from the 2 up to and including the 12 and 16-cylinder internal combustion engines of either single or two-spark type.



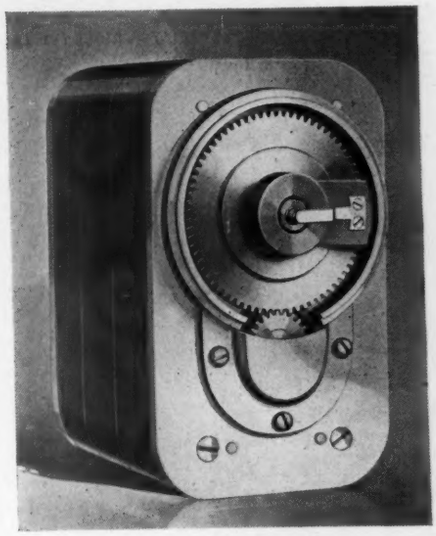
The Rogers Magneto
This illustrates the breaker mechanism. Adjustments can be made while the engine is operating

It is said that the Rogers gives a hotter spark because of the higher voltage and amperage that exists over a greatly multiplied magnetic area. This area is doubled on the 2, 4, 6 and 8 cylinder engine; increased 200 per cent. on the 12 and 16 cylinder engine, and on the Liberty motor is advanced 300 per cent.

This magneto has no moving wires or revolving armatures; the breaker is original and "pitting" is stated to be eliminated; the coil is waterproof and is extremely simple and accessible. On the two, four, six and eight-cylinder engines two sparks are produced per revolution of the rotor shaft.

This magneto is the invention of George D. Rogers, a pronounced production engineer, identified with many reputable concerns.

A striking feature of the 12-16 cylinder types of Rogers magneto is the fact that this two-pole type gives four sparks for each revolution of the rotor. The high spark productions thus lengthens the life of all moving parts. The maker states that the magnets tend to increase in efficiency, as each turn of the rotor tends to build them up. The condenser used in this magneto is another feature. It is stated that a test was made of this condenser by a nail driven through it and its operation continued perfectly. The coils are thoroughly impregnated and made absolutely moisture-proof.



Terminal End of the Rogers Magneto Distributor With the Terminals

countershaft gears, made from one large forging, are mounted on rollers.

When the power take-off is in operation, the transmission is in neutral. The driving bevel gear, which is integral with the drive end, drives the bevel pinion, which in turn drives the power take-off shaft when the clutch of this is engaged. Engagement of the power take-off clutch is by means of a lever. The power take-off shaft is so designed that it may be straight out from the side of the transmission or may be raised up from 6 to 8 in. by means of a train of gears to allow the shaft to be raised higher above the frame or clear the wheels if necessary.

In the gears, shaft and clutches, high-grade nickel-steel is used. The forks and control levers are made of drop forgings. The end thrust of the bevels, as well as the shaft, is taken up on double-row ball-bearings mounted on double-thrust type housings. A reversible oil thread and felt washer prevents leakage of oil from the gear box. A feature of this transmission is the use of ball and roller bearings, there being no plain bearing in it. It will be built in models to handle from two to five plows.

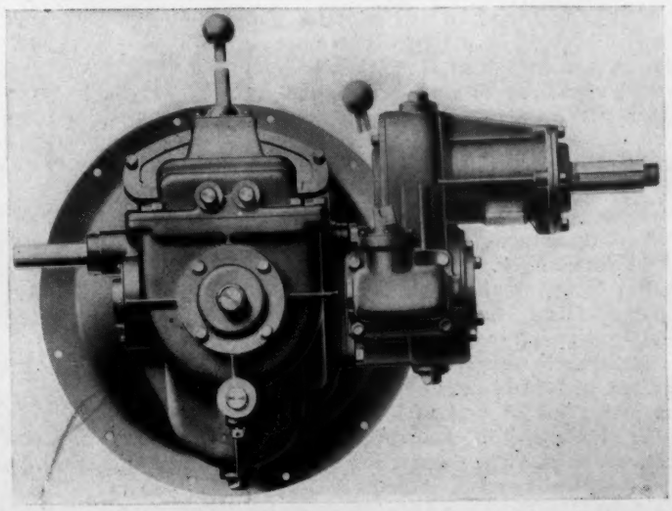
Tipco Emergency Hand Soap

A handy cleanser for the skin to be used in emergencies when soap and water are not available, is being manufactured by the Ignition Plug Co., 1411 West Broadway, Louisville, Ky. It is declared to thoroughly clean the hands and face without the use of water and will not affect the skin, it being as soft as it is when washed under normal conditions. This soap is particularly useful to carry in a car and in case of a roadside repair, it can be used to clean the hands and face very conveniently. It is also useful to the garage machinist, etc., to clean up in a hurry. This soap is free from acid or alkali and will not harm the skin. It contains no abrasive, such as pumice stone. It is packed in cans to retail at $.25, $1 and $2.

Cotta Tractor Transmission

A new transmission built exclusively for tractor service in which gears are always in mesh, has been announced by the Cotta Transmission Co., Rockford, Ill. In this new transmission the gear reductions are obtained by shifting of jaw clutches. It provides two speeds forward and one reverse. This transmission is provided with a power take-off, which can be attached either on the left or right side.

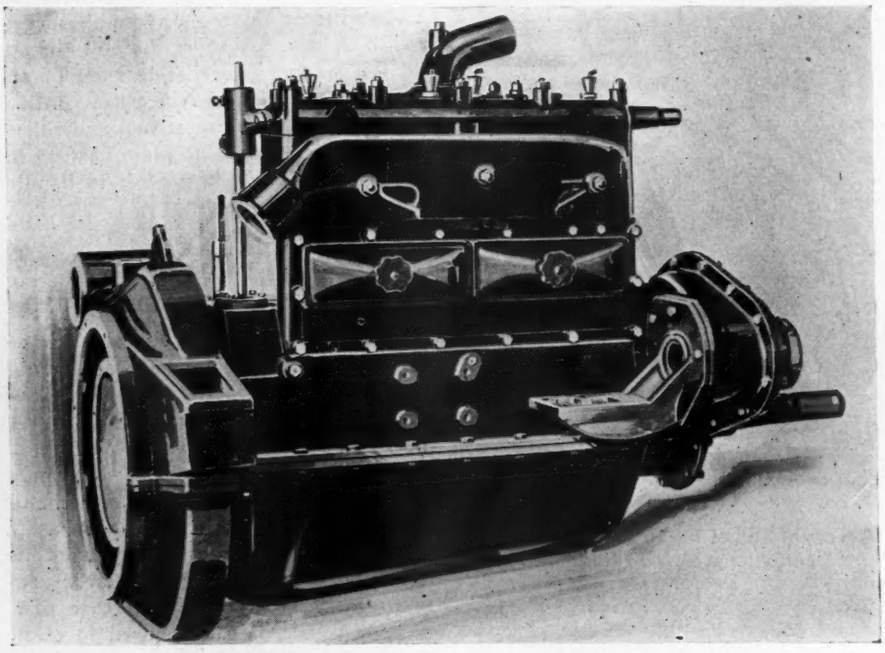
The direct speed is the plowing speed and the high speed, which is a speed above the direct, is for faster traveling when running light or during light work. The number of gears are reduced to a minimum and it has but one revolving shaft. The main shaft is mounted on double row ball bearings and the two



The New Cotta Tractor Transmission
In this transmission gears are always in mesh and the changes of speed are made through the shifting of the jaw clutches.

New Herschell-Spillman Engine Has Increased Capacity

THE Herschell-Spillman Motor Co., North Tonawanda, N. Y., has recently announced the starting of production of a new 3½ in. x 5 in. four-cylinder engine. This new engine will greatly resemble the old 3¼ x 5 in. model, embodying many of its good features, but has been increased in capacity. The company intends to discontinue production on all its other models, except a new light six, and concentrate its major efforts on the production of the new 3½ x 4 in. cylinder model. Into this engine will be consequently incorporated many years of practical engine experience.



Production is Being Started on the New 3½ x 5 in. Herschell-Spillman Engine

Particular stress will be placed upon fuel economy and increased capacity without an increase in weight.

The new engine will be known as the H-S Model 7000, Type 1. It will retain the three-point suspension of the old model. The engine, which is of the "L" head detachable top type, has a bore of 3½ in. and stroke of 5 in. Water inlet and outlet connections are bolted to their respective positions. The intake and exhaust manifolds are cast integral and bolted to the cylinders. The cylinders are cooled by an effective water-jacketing system.

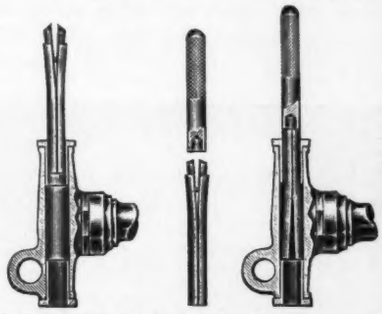
The crankcase is cast integral with the cylinders, giving great rigidity to the motor which makes for a more quiet operation and longer life. The valves, which are enclosed, are operated by interchangeable mushroom lifters having a diam. of 1¾ in., clear opening of 1 9-16 in. and a lift of 5-16 of an inch. The push rods are ⅝ in., and revolve in cast iron bearings. The connecting rods are of the conventional I-beam section drop forged type of two bolt cap construction. The length is 11 in. measured from the centers, and have a bearing surface of 2 x 2 in. The camshaft is forged from low carbon steel, having separate cams for each valve forged integral with the shaft. The cams are carbonized, hardened and ground to shape, and supported on three cast iron bearings. The sizes are: front 2-16 in. x 2⅝ in.; center 2 1-32 x ⅞ in., and rear 1⅛ x 2⅛ in.

The piston is cast from grey iron and thoroughly seasoned before being ground. Three 3-16 in. piston rings are carried well above the wrist pin. The wrist pins, which are ⅞ in. in diam. and 3¼ in. long, are made of seamless steel tubing, hardened and ground, and are anchored in piston by a set screw and pin in boss. The lubrication is force feed to the main crankshaft and pump shaft bearings. Splash to the upper and lower rod bearings and cylinders. An adjustable safety valve is placed in the oil line at the forward right-hand side of the motor, and the overflow from this valve is conducted by a tube to the timing gears. Oil retainers are placed at all necessary points so that practically all the oil is returned to the oil pan to be strained and recirculated by the pump. Starting, lighting and ignition is through standard S. A. E. equipment.

The J. & B. Spindle Body Bushing Remover

A special tool made of nickel steel, designed for the removing of bushings from the spindle body of a Ford, Dodge, Overland, Chevrolet, Saxon or any truck using a one-half inch spindle bolt, is said to greatly facilitate shop work.

To remove a bushing, the ram of this tool is inserted through the top bushing which automatically expands to bear upon the surface of the lower bushing.



J. & B. Spindle Body Bushing Removers

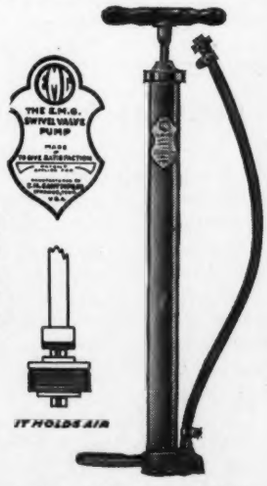
The handle shank is then slipped over the projecting lobes of the ram, and a few light taps with a hammer readily removes the bushing.

This tool has a Parker rustproof finish. It is produced by the J. & B. Mfg. Co., Pittsfield, Mass. The price is $1.

Swivel-Valve Pump

The E. M. Gant Mfg. Co., Inc., of Ethridge, Tenn., has developed a new practical feature in a tire pump.

The pump cylinder made of sixteen gage steel tubing, 1¼ in. diam., 20 in. long, screws into a heavy malleable iron base, provided with a folding foot rest. The plunger rod is made of heavy cold rolled steel. Operation is by a detachable handle. On the pump end of the plunger rod is an extra heavy oil-treated leather cup. A special air valve on the side is claimed to insure a full pump load at each stroke. The plunger head rides straight from top to bottom regardless of any turning movement of the handle while making the stroke. A 24-in. reinforced fabric rubber tubing, with the standard screw connections to fit the standard tire valves, constitute the complete equipment. This pump is finished in green enamel and the price is $3.25. The John E. Chumbley & Co., of Nashville, Tenn., handle the entire sales.



E. G. Swivel-Valve Tire Pump

The plunger head travels straight up and down regardless of any turning of the pump handle.

Ship by Truck

A Glance at Its Present Performance and Its Future

By Harvey S. Firestone, President, Firestone Tire & Rubber Company

IN previous considerations of Ship by Truck activities the truck express idea has been given prominence. The quick response of business men to this phase of Ship by Truck suggests the presentation here of further data recently secured through the Firestone Ship by Truck Bureau.

For example, Omaha, Nebraska, and Flint, Michigan, have offered a valuable suggestion in the establishment of warehouses or freight stations used in common by the truck express companies entering these cities. This permits convenient handling of through shipments and provides prompt transfers from one truck line to another.

Ship by Truck seems to be offering lower rates to the public than might be supposed. A case in point, is the investigation made of rates out of New York City, disclosing the fact that to many points in the state, in Connecticut, in New Jersey, and Massachusetts, the truck express rates are lower than the railroad rates.

Lower rates may not always be obtainable through Ship by Truck. But the shipper will realize the fact that the extra speed, convenience and adaptability of the truck express systems may be had at the same or little more than prevailing freight rates. And the shipper gains a certainty of delivery, an elimination of goods damaged in transit, a lowering of boxing costs, and a favorable impression on his customers that could be obtained in no other way.

Reports are coming in to the Akron office of the Firestone Ship by Truck Bureau, showing with what enthusiasm business men's organizations and entire communities are aiding the development of truck express lines.

Macon, Georgia, recently arranged a Ship by Truck demonstration day to test the truck express idea. Four truck trains, one train to a route, moved 100 tons of goods to towns within 50 miles of Macon. The demonstration was an education to merchants of the smaller towns as well as to shippers in Macon. A saving in time of from 1 to 10 days was accomplished.

Firestone Ship by Truck Bureaus are now in operation in the following cities:

Akron, Ohio	Milwaukee, Wis.
Albany, N. Y.	Minneapolis, Minn.
Atlanta, Ga.	Minot, N. D.
Baltimore, Md.	Nashville, Tenn.
Birmingham, Ala.	Newark, N. J.
Boston, Mass.	New Orleans, La.
Brooklyn, N. Y.	New York, N. Y.
Buffalo, N. Y.	Oakland, Cal.
Charlotte, N. C.	Oklahoma City, Okla.
Chicago, Ill.	Omaha, Nebr.
Cincinnati, Ohio	Philadelphia, Pa.
Cleveland, Ohio	Phoenix, Ariz.
Columbus, Ohio	Pittsburgh, Pa.
Dallas, Tex.	Portland, Ore.
Davenport, Ia.	Providence, R. I.
Des Moines, Ia.	Richmond, Va.
Detroit, Mich.	Rochester, N. Y.
El Paso, Tex.	Sacramento, Cal.
Erie, Pa.	St. Louis, Mo.
Fargo, N. D.	Salt Lake City, Utah
Grand Rapids, Mich.	San Antonio, Tex.
Great Falls, Mont.	San Francisco, Cal.
Harrisburg, Pa.	Scranton, Pa.
Hartford, Conn.	Seattle, Wash.
Houston, Tex.	Spokane, Wash.
Indianapolis, Ind.	Springfield, Mass.
Jacksonville, Fla.	Syracuse, N. Y.
Kansas City, Mo	Toledo, Ohio
Los Angeles, Cal.	Washington, D. C.
Louisville, Ky.	Wichita, Kan.
Memphis, Tenn.	Youngstown, Ohio

Call up your Local Bureau for Names of Lines, Rates, Schedules and Other Information Regarding Truck Shipment.

The Chamber of Commerce of York, Pennsylvania, seems to have an unusual record in spreading the knowledge of truck lines, routes and schedules among local business men. Among other things, a transportation map has been prepared which shows Ship by Truck routes to the immediate towns surrounding York, and also to Pittsburgh on the west, as far north as Buffalo, eastward to Philadelphia and New York, and a route south to Baltimore and Washington.

Detroit has proved that refrigerator trucks will move fresh meat to Toledo in about 6 hours as compared with 2½ days by rail. A Chicago packer ships to branch houses by a 12-ton semi-trailer.

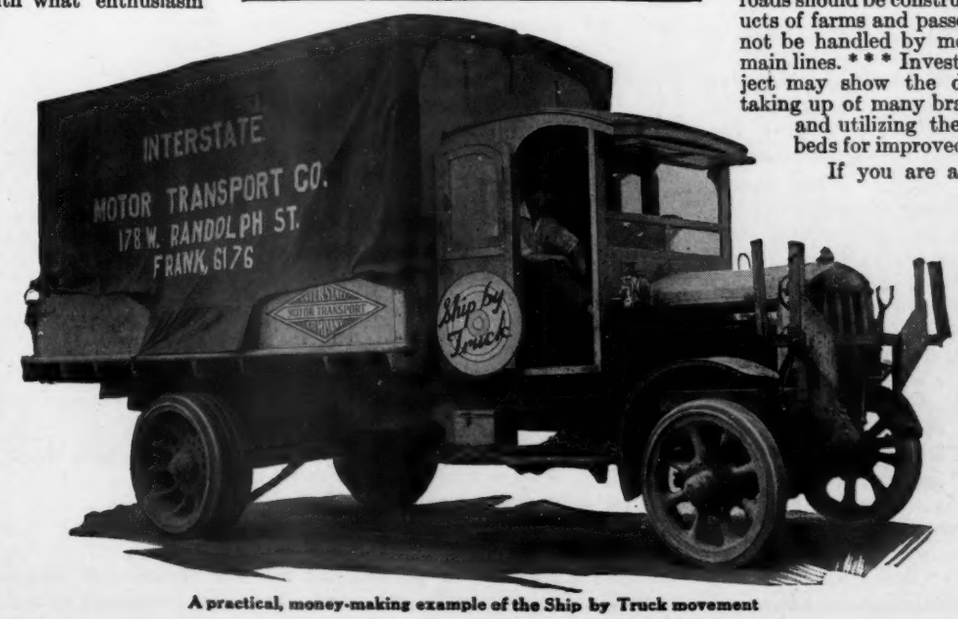
A large ice cream company of Cleveland has reduced transportation costs directly by operating trucks to Limaville—a distance of fifty miles—delivering ice cream and ice to their dealers on their down trip and bringing in cream on the return trip. Former delays and wastage were eliminated through this practical application of motor trucking.

The activities of Detroit in fostering truck transportation for the benefit of local shippers recently took the form of a parade so extensive as to require two hours to pass a given point.

Even a cursory study of the growth of the truck express systems inclines one to agree with that official in charge of engineering and maintenance for the U. S. Railroad Administration, who said recently:

"Where, heretofore, development of the country for 50 miles either side of a trunk line of railroad has required the construction of light branch lines, it is a question to be seriously considered whether this policy should be continued or whether good roads should be constructed and the products of farms and passenger travel should not be handled by motor trucks to the main lines. * * * Investigation of this subject may show the desirability of the taking up of many branch line railroads and utilizing the abandoned roadbeds for improved motor road."

If you are a shipper you may well ask yourself: "Am I profiting by what Ship by Truck has to offer?" If the question interests you let us suggest that you consult with the local Firestone Ship by Truck Bureau, the Central Firestone Ship by Truck Bureau in Akron, Ohio, or your local Chamber of Commerce.



A practical, money-making example of the Ship by Truck movement

Rural Motor Truck Express Exhibit at the New York State Fair Arouses Much Interest

THE 78th Annual New York State Fair, held at Syracuse, N. Y., exceeded in attendance all previous records by more than 19,000, and the 1918 patronage by 83,863. The unusual difference was probably due to the retarding effects of war. At any rate this year's super-normal attendance was 215,455 or a daily average of somewhat more than 35,000, making up manifold the temporary set-back of last year's event.

The Many Trucks Carrying Various Assortments of Farm Products Made an Impressive Appearance at the New York Exhibit

It was considered the greatest fair in the history of the state in every respect. The exhibits were bigger and better than ever before and the attractions were the best and most alluring the State Fair Commission could secure.

A new feature was the Rural Motor Express exhibit arranged under the auspices of the Division of Food and Markets of the State Department of Farms and Markets. This exhibit, which was housed in the State's Institute building, attracted a great deal of attention. About 6000 pamphlets describing the progress of the rural motor express and its advantages were taken by persons who showed a desire to know more about this movement. The desire of the public to become more intimately acquainted with this project is shown by the interest farmers, contractors, county agent leaders, librarians, school teachers, engineers, railroadmen, newspapermen and periodical representatives, numbering all told about 1100 individuals, expressed in signing cards requesting full information. Of this number about 200 were women. Hundreds of visitors were addressed in person and shown advantages of rural express by concrete examples.

The interesting features of the exhibit were three heavily loaded trucks that traveled long distances to actually demonstrate what the truck can do. An Oldsmobile loaded with a ton and a half of potatoes and apples traveled from Buffalo to Syracuse in less than two days' running time, arriving at the Fair in perfect condition. A Brockway, heavily loaded with baled straw, traveled from Cortland to Syracuse. A Sanford carried a load of butter tubs from Syracuse to a butter manufacturer in Buffalo.

These trucks gave demonstrations every other day in conjunction with twenty farm tractors. These automotive shows created great interest among the many thousands of farmers that witnessed them, many of whom were amazed at the performances of the trucks and other labor and time saving devices.

McCord Mfg. Co., Detroit, Mich., has recently published a catalogue which describes, with specifications, all the copper asbestos gaskets which the company manufactures. It also shows an assortment of shim stock together with miscellaneous gaskets of open and closed types.

Domestic Exports of Motor Trucks From the United States by Countries During July 1919

Countries	Number	Dollars
Belgium	7	$16,861
Denmark	58	131,485
Finland	...	...
France	162	799,532
Gibraltar	...	...
Greece	2	2,359
Iceland and Faroe Islands	5	2,892
Italy	1	3,000
Netherlands	5	11,714
Norway	83	151,932
Portugal	...	...
Spain	3	5,720
Sweden	37	50,390
Switzerland	...	...
England	12	18,443
Scotland	...	...
Ireland	...	...
British Honduras	...	...
Canada	135	235,279
Costa Rica	...	...
Guatemala	...	...
Honduras	1	3,600
Nicaragua	...	...
Panama	1	2,700
Salvador	...	...
Mexico	51	44,263
Newfoundland and Labrador	1	275
Barbados	...	...
Jamaica	...	...
Trinidad and Tobago	3	6,600
Other British West Indies	...	...
Cuba	69	158,981
Danish West Indies	...	...
Dutch West Indies	...	...
French West Indies	8	9,076
Haiti	...	...
Dominican Republic	10	15,902
Argentina	7	30,662
Bolivia	...	...
Brazil	5	9,201
Chile	5	4,677
Colombia	...	...
Ecuador	...	...
British Guiana	18	9,060
Paraguay	...	...
Peru	21	23,076
Uruguay	...	...
Venezuela	6	4,919
Aden	...	...
China	36	147,832
British India	8	16,828
Straits Settlements	10	20,289
Other British East Indies	...	...
Dutch East Indies	38	72,915
French East Indies	...	...
Hongkong	...	...
Japan	16	22,781
Russia in Asia	4	1,250
Siam	...	...
Australia	...	...
New Zealand	37	72,540
Other British Oceania	...	...
French Oceania	...	...
German Oceania	...	...
Philippine Islands	21	43,661
British West Africa	11	11,352
British South Africa	...	...
British East Africa	...	...
Canary Islands	...	...
French Africa	8	11,256
German Africa	...	...
Total	905	$2,173,303

Shipments to Non-Contiguous Territory

Alaska	5	$6,181
Hawaii	12	25,855
Porto Rico	21	39,943

Reliance Wheel Co., Youngstown, O., is receiving bids on the new factory which they are about to erect.

ROSS STEERING GEARS

PREDOMINATE on MOTOR TRUCKS

The Commercial Car Journal for August 15 contains advertisements of 75 motor trucks. 43 of this number (57 1/3%) are equipped with Ross Steering Gears.

The Literary Digest for August 30 contains advertisements for 13 motor trucks. 8 of this number (61 1/2%) are equipped with Ross Steering Gears.

There are 230 motor truck manufacturers in the United States. 144 of this number (62 3/5%) are equipped with Ross Steering Gears.

In spite of higher cost, Ross Steering Gears predominate overwhelmingly. Whether you are building or buying a motor truck, bear this fact in mind. For yourself or for your customers, make certain of the easy steering, reliable service and absolute safety which are assured by

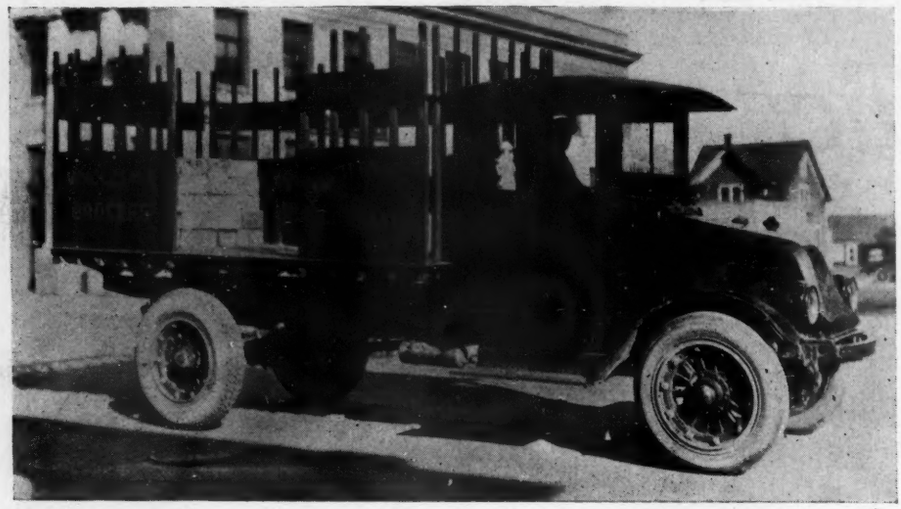
ROSS STEERING GEARS

Write for booklet, "Choosing a Motor Truck," and for complete list of 144 different trucks equipped with Ross Steering Gears.

ROSS GEAR & TOOL COMPANY, 760 HEATH ST., LAFAYETTE, IND.

Deliver All Their Groceries on Pneumatics

"I would not consider using anything but pneumatics on our trucks," says L. M. Barrett, general manager of Barrett Bros., wholesale grocers at Virginia, Minn., "for they have to be on the job winter and summer over all kinds of roads and pneumatics are the only kind of tire that has proved equal to that sort of work with us."



This International Two-Ton Truck Delivers Groceries to Stores Throughout the Iron Range Country. It is Equipped With Pneumatics and Fitted With a Winter Cab

The Barrett Bros. concern uses two International trucks of two-ton capacity each, and one GMC one-ton truck. It delivers groceries to stores as far as twelve miles away in the Iron Range country, both winter and summer. All trucks are fitted with winter cabs, for the thermometer drops very low in that country in winter time.

Deliver Own Trucks

General Motors Co., Detroit, Mich., recently staged a novel driveaway when six drivers started overland from the Pontiac factory with twelve GMC trucks destined for Hooper, Neb.

Six of the models were of the same capacity, making it impossible to load one upon another. The front wheels were removed from three of the trucks and the front axle placed on wooden stringers at the rear of another model of the same type and weight. The rear wheels of the one model rested on the ground and the front were fastened to the rear axle of the other truck with a swivel, so that it could turn. This virtually made a two-wheel trailer out of the rear truck.

Journey to Hooper was made in six days' actual running without mishaps.

Bureau of Public Roads, United States Department of Agriculture, is soon to publish a bulletin which will deal exclusively with motor trucks, their increasing use in the country, and the effects on highways of this new method of transportation.

Uniform Laws Urged

Frederick S. Greene, New York State Commissioner of Highways, has written to Colonel Sherrill of the U. S. War Department, calling his attention to the urgent necessity of having the states of the Union enact uniform traffic legislation. A great many states are now beginning to enact motor truck legislation. The laws are not uniform. This leads to confusion and has a tendency to impede the manufacture of trucks.

Mr. Greene suggests that the law should limit the size and weight of vehicles per inch of tire, but that these laws should be uniform in all states.

Highways and Transport Work Co-ordinated

WASHINGTON, D. C., Sept. 29.—The work of the Highways Transport Committee will be carried on in the future by the Federal Highway Council. The work of the Highways Committee will be under the supervision of Chas. W. Reid, who will be known as manager of the Transportation Bureau of the Federal Highway Council.

The aims of the new Bureau are:

To assist in co-ordinating the highways with the other transportation agencies of the country; to encourage the development of highways that would advance the economic life of the nation; to stimulate their use in such manner as to facilitate and cheapen the transportation of food, raw materials and finished products; and to co-operate with Government agencies, both state and national, to the end that our highways may be of maximum service in the transportation system of the country.

In announcing this platform it will be the aim of the Transportation Bureau to seek:

To recognize the problems of the road builder.

To realize the needs of the road user.

To visualize future highway transport requirements.

To co-operate with the railroads and waterways to the end that the public may have in full that form of transportation which is most efficient, economical and practical.

To study the problems attending the entrance of the motor truck into commercial life in order to assist that industry, which is industrially great and financially strong in its efforts to be economically right.

To promote uniform legislation and encourage every movement for the safety of life and limb on the highway.

To encourage the establishment of motor express lines where such lines will insure a fair return to the investor and serve a useful purpose in the community.

To gather such information and statistics as will be of value to those interested in determining the economic field for highway transport, and act as a clearing house for the dissemination of the same.

It Isn't Every Motor Truck That Has the Honor of Being Driven Behind the Commanding General of the American Army as Were These Trucks in the Monster Ovation Staged by New York

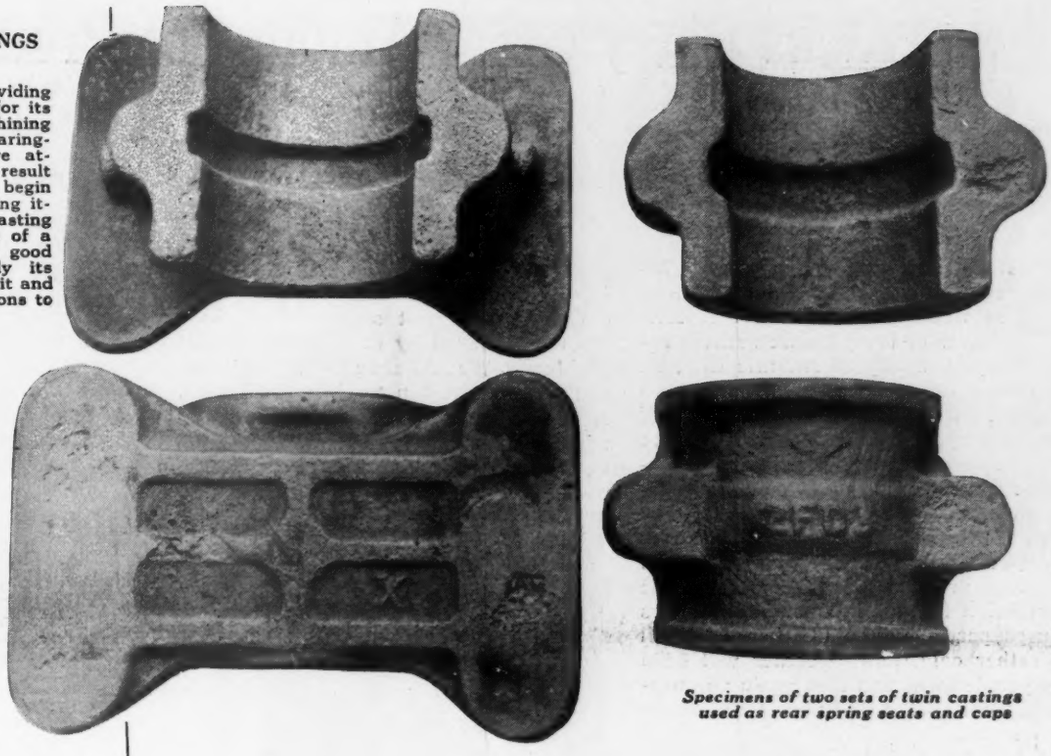
SIVYER (S) CASTINGS

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly: Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly: Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly: Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.



Specimens of two sets of twin castings used as rear spring seats and caps

THE Sivyer castings shown on this page replaced malleables because of the tendency of malleables to crystallize and break. The superior strength, toughness, and resistance to crystallization of Sivyer Electric Steel prevents such crystallization and breakage. In trucks, tractors, and automobiles, castings of Sivyer Electric Steel are being used by more and more manufacturers to a constantly increasing extent. They resist crystallization and wear amazingly; and they cut machining costs.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Trucks Carry Great Amount of Produce to Atlantic City

Success in This Truck Route is Evinced in the Rapid Growth of Contemporary Hauling Companys

By JAMES W. COTTRELL

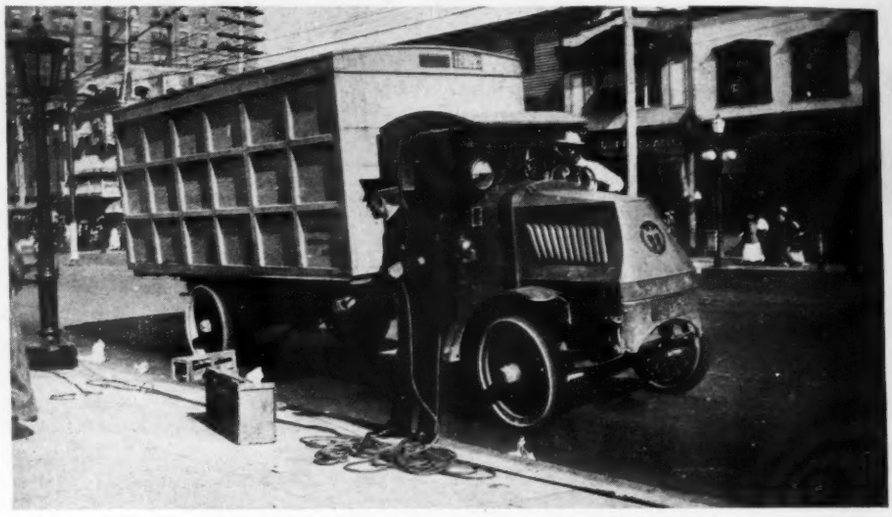
SIX truck lines give daily service between Philadelphia wholesale markets and famous seashore resort.

Few of the pleasure seekers enjoying a stay in Atlantic City, N. J., realize the problem involved in supplying food for such a large number of people varying in number from day to day. The permanent population of Atlantic City is about 60,000 and the population in summer is about 300,000 at the height of the season with an increase over the week-ends. An important phase in this food problem to be considered is the fluctuation in the number of visitors caused partly by the weather. A spell of rather cold, rainy weather will keep the people away and then again an unexpected hot spell will bring in thousands of visitors.

A large part of the food supply comes from the wholesale markets in Philadelphia sixty miles away. The majority of the shipments are made by express as freight service is too slow for perishables needed at once. Several lines of motor trucks run daily between Atlantic City and Philadelphia, hauling, principally, fruit and produce. The buyers from the large retail and wholesale stores and hotels in Atlantic City go to Philadelphia at night and buy in the market during early morning hours. The trucks then pick up the purchases and as soon as a load is made up start for Atlantic City.

The running time to Atlantic City is approximately six hours under ordinary conditions. This is longer than the running time of the express trains on the railroads, but the trucks carry the loads from the market in Philadelphia uninterrupted to the store or hotel in Atlantic City, saving the time lost by the railroad express service in frequent changes and other unforeseen delays. Whereas the truck, unlike the railroad service, starts the minute the load is ready and unloads in Atlantic City immediately on arrival. This method of transport effects an appreciable saving in cost and convenience, particularly in view of the same rate charged by companies, which is 75c. per hundred pounds.

One of the most successful of these lines is operated by C. R. Flack, of 108 N. Morris Ave., Atlantic City. He started running one five-ton truck in April, 1918. A year later another five-ton truck was added to the service. In August, 1919, the first truck, which ran up a mileage of 65,000 in 15 months, was traded in for a 5½-ton Mack.



Five-Ton Mack Equipped With a Capacious Freight Body

Makes One Trip Daily

At the present time each truck makes a trip to Philadelphia and back every day, except Sunday. The trucks leave Atlantic City in the evening, reach Philadelphia in time for the early morning market and return late in the morning or early afternoon. The Dock St. market in Philadelphia used to open about midnight, but now it is the rule that shipments are not to leave before 4 A. M. except Saturday, when the time is 3 A. M.

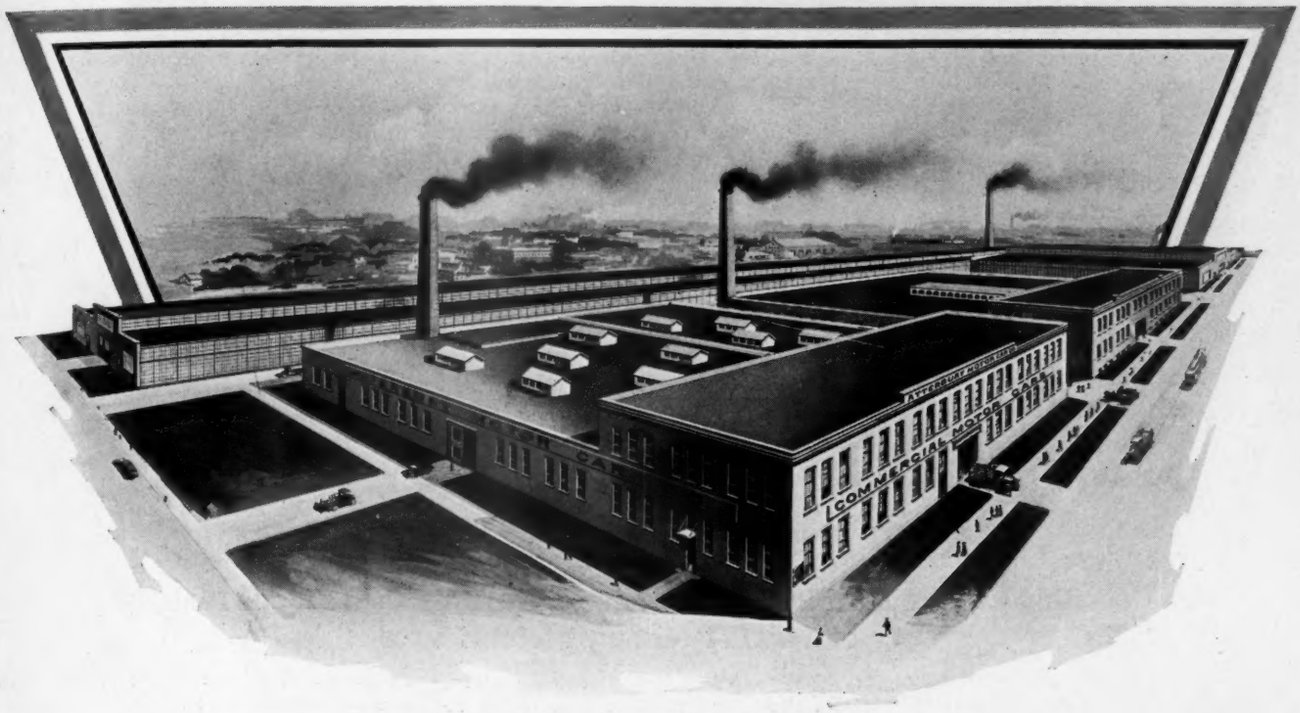
The operation of these trucks has been successful and profitable. In fact, the success of this line has led to the starting of others. The first truck used by Mr. Flack is credited with having paid for itself in ten months. The use of a second truck for the same work after a year is evidence of the permanency and growth of the business.

No small part of the success of the line is due to the ability of Mr. Flack to sell his service. During the present season he is hauling two full loads every day for one dealer.

But getting a return load was the difficult problem. During the season almost any amount of hauling can be obtained from Philadelphia to Atlantic City. But there is a shortage of return loads. Atlantic City is strictly a pleasure and health resort. There is no manufacturing of any kind and almost no business except that bearing directly upon the wants of the visitors. Mr. Flack has secured a contract to haul soiled laundry from Atlantic City to Philadelphia. While the loads are heavy the first part of the week they are light toward the end of the week. The laundry makes a very acceptable return load and greatly increases the income of the trucks without entailing a noticeable increase in the expenses. The laundry is returned to Atlantic City by express. Some trucks also pick up part loads of fish or oysters from Absecon.

Mr. Flack goes to Philadelphia by train every night to see to the loading, returning to Atlantic City the same way to superintend the unloading and to make arrangements for the trips on the morrow.

Another Ample Body Typical of Those Used in This Line of Work.



The Atterbury plant keeps pace with prosperous Atterbury dealers

The picture above shows the Atterbury factories as they will appear when the additions now under way are completed. The additional buildings alone will total 60,000 square feet of floor space.

10 years of truck making experience behind each ATTERBURY

For ten years Atterbury dealers have been sharing in Atterbury prosperity.

They represent the pick of motor truck dealers in America, just as the Atterbury stands out among all other motor trucks.

And because they were wise in their choice of a motor truck agency, their business has grown steadily, surely, and more swiftly as the Atterbury's friends have multiplied.

Now, with increased manufacturing facilities, Atterbury production will once more keep pace with demand.

A few more dealerships will, therefore, be available. Prompt action may secure for you this very valuable franchise.

ATTERBURY MOTOR CAR CO., BUFFALO, N. Y.

ATTERBURY

MOTOR TRUCKS OF MAXIMUM SERVICE

There are among other trucks operating in this service one 5-ton White, owned by Abe Zegar, Atlantic City; one 3-ton Packard, John Martino, Atlantic City; one 5-ton Acme, George Wolf, Atlantic City; one 5-ton White, John Boyce, Atlantic City, and two 5-ton Pierce-Arrows, Peter Spinelli, Philadelphia.

Construction Detours Only Drawback

The construction work on the White Horse pike this summer, over which the trucks travel from Philadelphia to Atlantic City, has been a source of much trouble, delay and expense. At present five different sections of road are under construction. The detours quickly go to pieces under the heavy travel. The trucks are often "stuck" in turning out on the narrow roads on detours. The friendly spirit of co-operation among the drivers of the various trucks has done much to overcome the difficulty.

When the paving of the White Horse pike is completed the truck owners will be relieved of the one big obstacle in their business. That heavy trucks have been able to operate at all over some of the detours is a striking evidence of the wonderful strides made in developing the road ability of the modern motor truck.

All of the truck owners expect to maintain their service at least three or four days a week during the winter.

From the experience of truck owners in this Atlantic City-Philadelphia service it appears that the successful operation of such lines depends upon: First, securing the business or a large part of it from regular customers in advance; second, "digging up" some return load; third, an unusual measure of personal attention to the business, arranging shipments and loads daily with customers.

None of the truck lines have receiving stations in either Philadelphia or Atlantic City. But they do have offices or telephones to take care of calls.

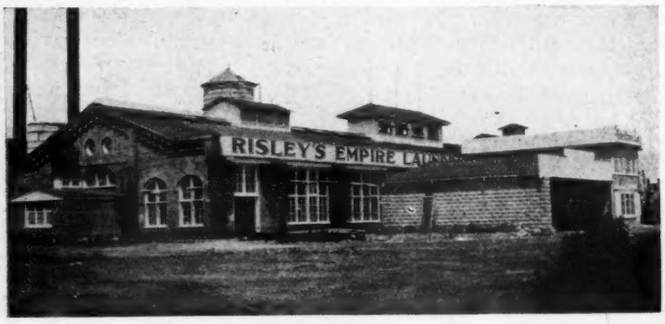
Motor Trucks Enable Laundry to Serve City Seven Miles Away

High Operating Cost Entailed by Former Horse and Wagon Collection is Materially Cut Down by Establishing Motor Service

RISLEY'S Empire Laundry, which serves Atlantic City, N. J., is located at Pleasantville, which is seven miles from the famous seashore resort.

The reasons for building the laundry plant at such a distance from the source of its trade are for water supply and for air for drying. The water supplied to Pleasantville is very soft and free from any trace of color. This gives the finished work a very desirable "white" appearance. Whenever possible drying is done in the open air and sunlight. The effect of drying in the sunlight cannot be exactly duplicated by steam drying. The space necessary for the plant would be very costly in Atlantic City as the value of land and rents there is very high. The plant is located on the outskirts of Pleasantville and the air is remarkably free from dust and smoke.

But the seven-mile trip to Atlantic City for collection and delivery was a handicap to the use of horses and wagons which caused early interest in trucks. In fact the first trucks were used in 1910. Trucks have been used ever since.



Risley's Empire Laundry, Pleasantville, N. J., Serves Atlantic City.

Double Handling is Eliminated

At one time the laundry was collected in Atlantic City by horse and wagon and taken to a central station. From this point the laundry was taken to the plant at Pleasantville in trucks. The delivery was made in reverse order, the trucks taking the laundry to the central station, where the packages were transferred to wagons for delivery to the customers.

This method involved a double handling of every package of laundry. And the rent of the building in Atlantic City was an item of importance.

The method at present in use is to collect the laundry with ½-ton and one-ton trucks and go direct to the plant. Delivery is made in the same way. Packages for one route are put in a truck and delivered to the customer in Atlantic City from that truck. This method has been found to be quicker and cheaper than the older method. The operating force and rent of the station have been abolished and better service in every way given to the customers.

Trucks Collect and Carry Laundry Direct to This Plant.

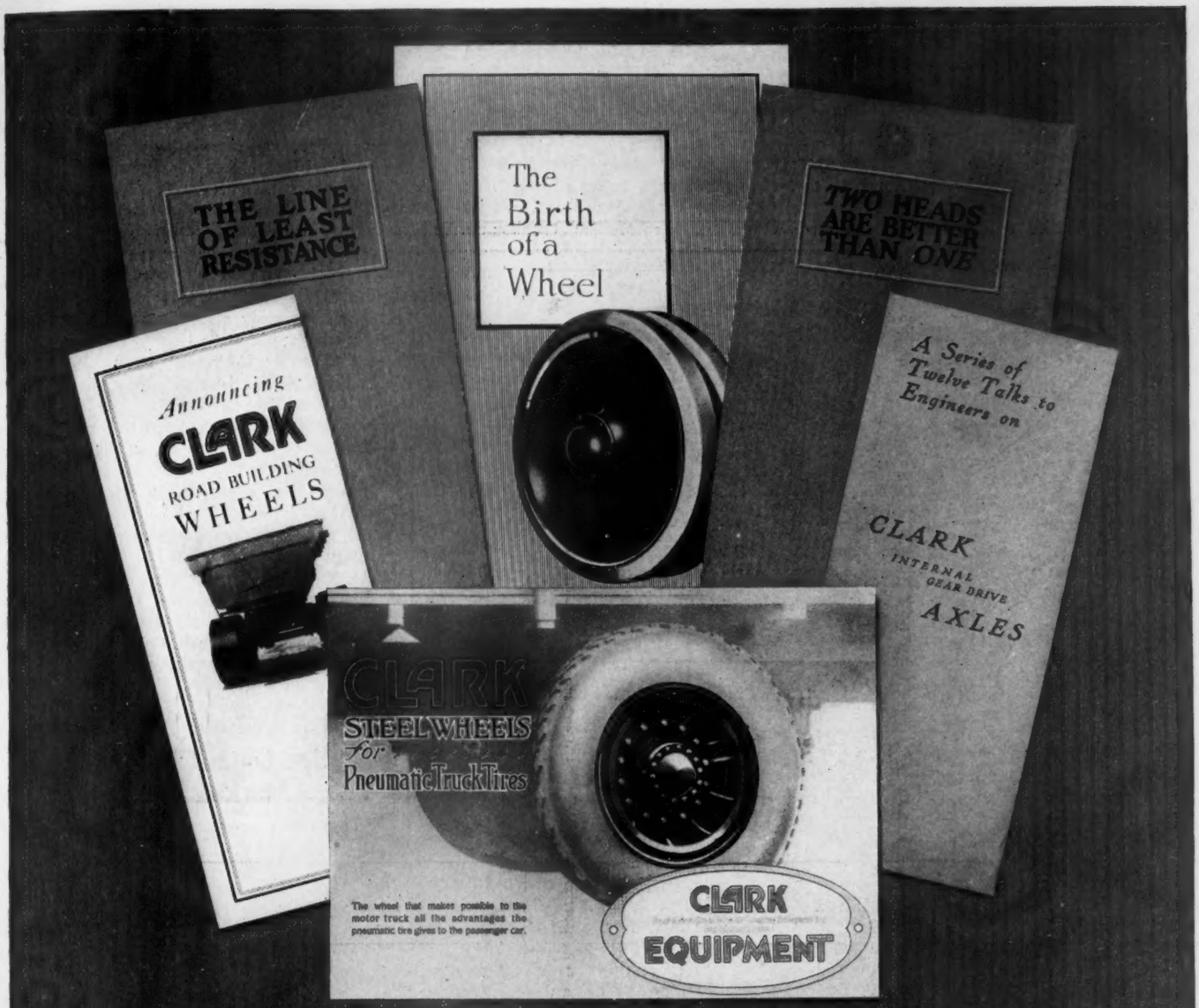
The equipment consists now of one Rush ½-ton truck, three Ford one-ton trucks for collection delivery. For the hotel trade, where large quantities can be secured from one customer, two 2-ton White and an Autocar truck are used.

The business varies greatly with the season. During the winter the business is comparatively light. The permanent population of Atlantic City is about 60,000. During the height of the season in August the population is estimated at 300,000 or possibly more, counting in the one-day excursionists. The immense increase in population in the season means a rush of business for everyone catering to this army of people.

Risley's Laundry does not maintain any system of maintenance for their trucks. Most of the repairs are made in local garages or by dealers who have sold them equipment. Many different makes of trucks have been used in their nine years' experience with motor transportation. The "service" given by dealers and by manufacturers has varied greatly. On some trucks a broken part has laid up a truck sometimes for weeks. A serious matter, indeed, during the busy season. Ability to secure repairs quickly and at reasonable prices is the determining factor now in the purchase of additional equipment.

Some of the troubles with the trucks has been due to the individual drivers. The acceptable driver for a laundry truck is not usually the mechanic. The drivers must meet the customers, show tact and real sales ability, and keep up a neat appearance in keeping with the laundry service.

Dealers offering trucks for use in businesses having a "peak load," such as the Risley business in summer, must be ready to give unusually prompt service on parts and repairs. Indeed, success or failure depends upon this one question.



The More Most Men Know About CLARK AXLES and CLARK WHEELS, the Better They Like Them

Truck manufacturers who use Clark Internal Gear Drive Axles do so because they give to their truck users an exceptionally large factor of safety—due to the unusually strong load-carrying member and driving shafts and extra large bearings.

The distinctive advantages of Clark Internal Gear Drive Axles and Clark Steel Wheels for solid and pneumatic truck tires are set forth in these booklets which will be cheerfully mailed to interested persons.

Clark Equipment is found only on good motor trucks

CLARK EQUIPMENT COMPANY, Buchanan, Michigan

Also Lubricating Chart for Clark Axles

Trucks Move Peach Crop of Sixty-Thousand Bushels

In handling highly perishable fruit crops, notably peaches, motor trucks are being used to great advantage. At the Harrisons' Nurseries, at Berlin, Maryland, two White trucks carried the entire crop of 2,500 acres of peach trees—a crop that this year amounted to 60,000 bushels—from the orchards to the packing house, where it is loaded into refrigerator cars.

White Truck Loaded With Peaches, Leaving One of the Harrison Orchards, Berlin, Md.

Harrisons' Nurseries comprise 7,000 acres, with orchards and nurseries scattered over a four-mile radius from the packing house, which is located on a spur track of the Pennsylvania line.

In the orchards the peaches are picked into ⅝-bu. baskets and transported by the trucks to the packing house. Ordinarily the trucks each carry 150 to 175 baskets and they make 12 to 15 trips a day each. On one particularly busy day one of the trucks made 13 round trips, carrying 184 baskets on each trip—and made two runs to an orchard four miles away to carry employes. On another occasion one of the trucks carried a force of Harrison employes to an orchard at Easton, in which the Harrisons are interested, aided in picking and packing $16,000 worth of peaches, and carried its crew the 75 miles back across the Eastern Shore peninsula to Berlin—all in six days.

The peach season covers only a few weeks of each year. But throughout the year there is work at the Harrison plant for the two trucks. In winter they carry shipments of nursery stock to the railroad. Besides, they haul fertilizer and other farm supplies and engage in the many and varied jobs of transportation that continually present themselves.

Ahlberg Bearing Service Includes Thoroughly Trained Service Man

The Ahlberg Bearing Co., 317-327 East 29th St., Chicago, specializes in the regrinding of worn ball bearings for replacement purposes for motor trucks, passenger cars and machinery. The feature of this business is their exchange system. Throughout the country they have a chain of branches located in seventeen cities which are supplied with a stock of reground and new bearings.

A customer wishing a reground bearing to replace his worn bearing needs only to take the worn bearing out of the truck, take it to the nearest Ahlberg factory office and have it exchanged without delay for a reground bearing of the same make and type as the one he brought in. There is no charge made for this exchange service, which is maintained for the customer's benefit.

During the past ten years the Ahlberg Bearing Co. has collected a stock of all sizes and types of bearings, many of which are now obsolete. If a customer has a bearing of an obsolete type he can usually have it exchanged at one of the Ahlberg branches without delay for a reground bearing. Whereas, if he tried to secure it from the original manufacturer he could not do so, and if he had it made up the cost would be prohibitive, and to wait for the regrinding of the old bearing would mean a delay of two or three days.

At each of the factory branches is a service man who is able to give customers information on their replacement problems and on new special bearings. Each of these service men are put through a course at the factory's school, which lasts at least a month at a full eight-hour day. He is first put to work at what is called the disassembling bench. At this bench he tears down the worn bearings until he is thoroughly familiar with all the different types and sizes and the different defects of each type and size as they show up during his work at this bench.

He is next put to work in the grinding room where he observes the methods used by the grinders. He is not allowed to do actual grinding work, as this would upset production and might harm the quality which is carefully guarded in the grinding room. From observing the grinders he learns what is necessary to make a perfectly true raceway. He next observes the inspectors. From his experience here he learns the different methods of inspection. He is next turned over to the assemblers who instruct him in the methods of assembling the various types of ball bearings.

Following this and some other steps taken in between he is put to work in the Chicago service department for approximately two weeks. This experience makes him perfectly fit to give truck owners the very best possible advice on their bearing replacement.

Statistics Show That the Gasoline Output Has Made a Marked Increase

Increased production of gasoline and all kinds of oil in the 6 months ended June 30, 1919, as compared with the previous year, is indicated by the statistics compiled by the Bureau of Mines. Gasoline production has increased while exports have decreased. The total output of the first six months of 1919 exceeds that of the corresponding period in 1918 by 237,000,000 gal. At the same time, due chiefly to the cessation of hostilities, exports have decreased by 98,000,000 gal. Delving further into the subject we find that the gasoline that was exported to the insular possessions of the United States increased 3,000,000 gal. over that of 1918, due to the release of tankers for domestic trade. Domestic consumption of gasoline was 42,000,000 gal. greater in the first half of this year than in the first half of 1918. An increase of this amount was entirely expected, in fact it was prophesied that because of the number of cars operating daily and the rapid progress of production of trucks the demand for gasoline will continue to increase. Statistics also show that the gasoline production in the month of June, 1919, amounted to 338,336,985 gal., which is an average daily rate of 11,277,899 gal. as compared with 10,500,781 and 7,789,058 gal. for 1918 and 1917 respectively. The exports in the two six months' period were 157,798,652 gal. for 1919 and 275,373,335 gal. for 1918. In spite of an increased domestic consumption from 1,385,885,934 gal. in 1918, to 1,427,067,156 gal. in 1919. Stocks on hand were 593,896,610 gal. from June 30, 1919, and 418,404,353 gal. on June 30, 1918.

WINNING the Packard National Efficiency Test makes me competent to judge upkeep on a 1½-ton truck working under capacity loads, and I will say right here that the sum total of minimum operating expenses is—dependable equipment.

Our winning truck used UNITED STATES TIRES—the front set covering over 16,000 miles—the rear over 14,000. Today, both sets look good for 20,000 miles more.

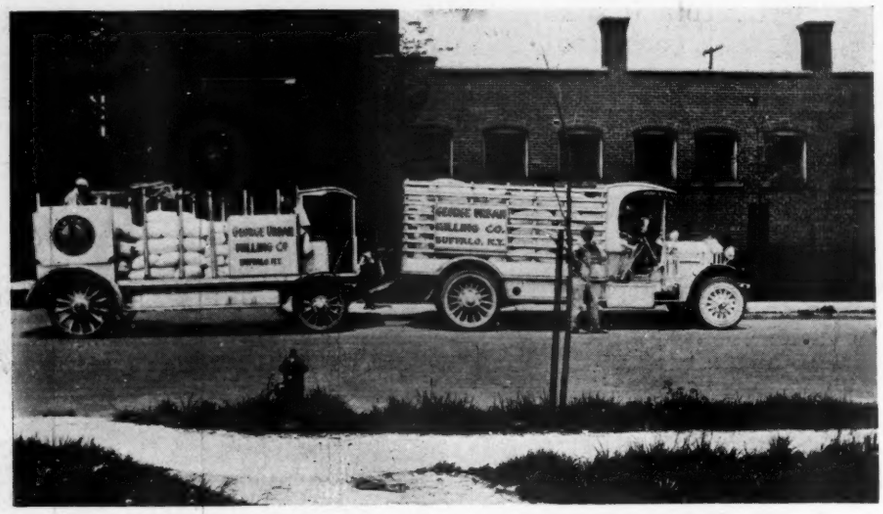
I can truthfully state that UNITED STATES TIRES aided materially in winning the contest.

James L. Drury
—Driver

Equipped with United States Tires this truck made the best record over 1760 contestants

Milling Company Uses Truck and Trailer for Rural Delivery

THE George Urban Milling Co., of Buffalo, N. Y., uses a 5-ton Pierce-Arrow truck with a 5-ton trailer in making rural deliveries. The trailer was remade from an Atterbury truck, and has been painted white to correspond with the truck, so that the combination attracts considerable attention, especially when both vehicles are loaded to capacity with sacks of flour.



Flour Milling Company Uses an Attractively White-Painted Truck and Trailer for Delivery, That Also Enacts the Roll of an Itinerate Advertising Medium in the Rural District

The firm uses other trucks and some horses in its city work, reserving the big truck and trailer exclusively for rural delivery. No figures are kept of the cost of the service, as the company cares more for the advertising value than for the cost of upkeep. The saving of carting costs to the train in Buffalo and from the train to the rural dealer's store is looked upon as a minor consideration. The important factor is that the flour is delivered to the dealer in containers which are in spotless condition, thereby advertising to the general consumers along the routes the truck travels the cleanliness of the flour.

Both truck and trailer are equipped throughout with Goodrich tires. Three men go with the outfit, one of them on the trailer to operate the hand brakes. A speed of eight miles an hour is maintained, and two trips a day can be made to Akron, Alden, East Aurora, or the Tonawandas, and three round trips to Williamsville, Lancaster and Depew.

Some Good Pointers on the Care of Ball Bearings

A GOOD ball bearing may be spoiled by neglect or carelessness before it ever goes into service. Observance of the following simple precautions, which have been compiled by the Hess Bright Mfg. Co., 165 Broadway, New York City, will result in better ball bearing service and a greater degree of satisfaction in their use.

Bearings which are to be carried in stock for any length of time should be kept enclosed in their original packings and stored in a dry place. Rust may be largely prevented by storing the bearings in clean wooden bins, preferably of white pine and unpainted on the portions surrounding the bearings. The grain of the wood absorbs much moisture.

In so far as possible, a bearing should not be removed from the original packing until it is ready to be assembled into its housing. Should it be desired to clean the bearing for the purpose of inspection, the original slushing compound is to be washed out in clean kerosene. After inspection, the bearing should again be thoroughly washed, blown out with compressed air, and repacked with vaseline or some non-acid lubricant.

It is desirable to employ three buckets of kerosene in washing the bearings, using the buckets always in the same rotation, and in that way keeping a bucket of clean kerosene for the final washing.

Any bearing which is exposed anywhere in the plant should be thoroughly cleaned out before being assembled.

Bearings should not be rotated if there is any evidence of foreign material in them. Any small chip or abrasive material will adhere to the surface of the groove or ball, and when the bearing is rotated, these foreign particles may be embedded in the surface, which will cause premature failure. This is especially true of abrasive materials, and every precaution should be taken to keep all such entirely away from the bearing.

Special attention should be given to cleaning the housing in which the bearing is to be mounted; making sure that all core sand and chips are removed, for that may easily be carried into the bearing by the action of the lubricant.

The inner race of the bearing should never be forced on or off its seat by driving through the outer race, and neither should the outer race be forced into its housing by driving through the inner race. The danger in this is that the finely polished surface of the balls or the grooves will be actually indented, thus causing roughness and premature failure of the bearing. A hammer blow may easily produce dangerous stresses in the bearing rings.

In service, a ball bearing must be lubricated. The oil or grease should be clean and chemically pure—free of acid and alkali or filler materials. Every few months—this period depending on the nature of the service—the housing should be cleaned out and fresh lubricant added.

Please, for your bearing's sake, remember that the maker of good ball bearings has gone to considerable expense to deliver clean and accurate bearings to you. Throughout their manufacture, every possible precaution has been taken, and before shipment they have passed a complete and detailed system of inspection.

Do not make this an unnecessary expense by disregarding the above instructions.

Mounting Bearings

The inner race should be a light press (or light drive) fit on its shaft, and should be secured against turning on the shaft by being clamped fast between a shoulder and a nut securely locked. The pressure should be applied against the race which is being fitted, not against the other race, as that is liable to injure the balls and races. Care must be taken not to bind the race by pressing or driving on one side only.

The outer race should be a "sucking" fit in the housing, and free from side clamping, so that slight vibrations of load will cause a slow intermittent creep, thus continually bringing new sections of the race under the load. Even when taking thrust load the outer race should have a slight endwise clearance of 1-100 in. in order to allow this creep.

The housing, in order to retain lubricant and exclude dust and dirt, should have one or more grooves in the closure surrounding the shaft, and the lips of the closure should have a clearance of 1-100 in. from the shaft.

Worn bearings should never be refilled with the ordinary balls of commerce, as these are neither hard enough nor accurate enough in size or shape. Inequality of size between balls or irregularity of shape will cause overload and crushing of larger balls.

FISK TIRES

BUSINESS AMERICA IS VITALLY INTERESTED IN THE FISK IDEAL

IT means industrial harmony—therefore, bigger and better output.

For more than twenty years the ideal of the Fisk Rubber Company has been to be "the best concern in the world to work for and the squarest concern in existence to do business with."

Use Fisk Tires on your commercial vehicles—products of the square deal in industry—better tires are not made.

System and Planning Produce Truck Sales

Whether It be Sales or Service, Both Are Required. Selling Five Hundred Trucks in a City Situated Among the Mountains of Pennsylvania is a Pretty Good Record, But the Firm Who Did It Found Both Were Necessary

By H. R. BRATE

IF there are such truck dealers,—and we don't believe there are many—who have reached a point where to their minds the truck business is a mighty slow one and is going to the dogs, as well as those dealers located in the large cities, or in territory where in the surrounding country there are prosperous farms, coupled with good roads, and who still find sales rather difficult, we say take heart and get busy. If a firm located in a city among the mountains of Pennsylvania can sell 500 trucks, surely every truck dealer, and especially those more favorably located, should sell all the trucks their factory is willing to allot.

What is required, as much as anything, is a get-together meeting of the sales organization and taking account of conditions as they exist, making a survey of the territory, and working out a definite plan. When once worked out it should be strictly adhered to, for such a length of time at least, that ample opportunity can be given to satisfy all concerned that certain changes are necessary. The chances are that you will, after a time, make a few changes, but don't be discouraged because the first few weeks don't show immediate results. This is the method used by the Motor Truck Sales Co., Wilkes-Barre, Pa., and the fact that they have sold over 500 trucks is pretty good proof that their plan is a success.

"A short time after we started in the truck business," said Mr. F. O. Williams, "we decided that the only successful way to sell trucks was to get our salesmen together and go over the entire situation, and then map out a definite plan. This resulted in dividing our territory into four sections and the salesman to whom the territory was allotted was responsible for the sales therein. We prepared a list of prospects and the total, we figured, according to the law of average, would give us the volume of business we had set as our mark, and it has worked out.

"We insist that each salesman make at least four calls each day, that is, call on four honest-to-goodness prospects. Every few weeks we get our men together and go over the list of prospects and work out a systematic canvass covering the coming weeks. Every morning each salesman is given a slip giving the calls he is to make that day, and at night he must report the results. Of course, we don't limit him to four calls in case he has time to make more, but the point is that he must call on the four whose names are on that slip. Following that program has produced the results.

"As local distributors for Republic trucks, we, of course, have a number of sub-agents and they have been the means of selling quite a number of the five hundred trucks, but over one-half of that number have been sold by our men locally and at retail prices. Our men take turns in working out with the sub-agents, but even then the same system is followed. A man starts out with a truck and drives up to the prospect's place of business and demonstrates to him by actual handling, the saving and convenience of delivering his goods with a truck.

Figures Help

"Another thing we have found of help and that is making a study of a man's business, as far as the hauling is concerned, so that when our men go to a prospect, he can tell him just what he may expect in the matter of upkeep and operation costs in his particular line of business. For example: We can go to a wholesale grocer and show him in dollars and cents the saving he may expect over his present method of hauling and delivering. We can show him just what some other wholesaler who has one of our trucks is doing, and there is nothing like cold figures to convince a man that we have the proposition for his business.

"Another thing that has been helpful in our experience, and which in itself doesn't amount to much, is the order blank. The business man likes to see and have everything down in black and white. He wants to know just what a thing is going to cost him, and the blank we have gotten up does that. It prevents an over ambitious salesman making promises to a customer, in order to get his order, that cannot be lived up to. The customer knows just what he is to get; just what it is going to cost him, and we know just what is expected of us."

Teaching the Driver

The Motor Truck Sales Co. believes that the time used in instructing the driver who is to operate the truck is money well spent. The driver who knows his truck is the one who will keep down the "upkeep" costs, which, of course, means a better satisfied customer. In order to do this considerable time is spent with the driver, when a new truck is delivered, so that he is sufficiently familiar with the truck and its working parts to care of it and make minor repairs. In fact they expect to soon open a school, where a course in truck "upkeep" and care is to be given to the drivers of Republic trucks without cost.

Sales without service is like faith without works. It's dead. You may be ever so successful in selling trucks, but if you don't render service, you'll soon have to get out of business. But that doesn't necessarily mean free service, not by any means. When you give service a system should be followed so that you can render a correct statement of what you have done and furnished. A guess won't do; trusting to memory won't either.

Service Calls for a System

When a truck is driven in to the service station of the Motor Truck Sales Co. for either inspection or repair, a form is made out in triplicate. The name of the owner is given and the instructions regarding the service to be performed is written down and then signed by the owner or driver. The original copy is filed in the office, one copy is given to the foreman and the third attached to the truck. The materials or parts used, as well as the time of the repairman, are recorded on the back of the copy which is given to the foreman. This is printed on heavy manilla paper so that it is not so apt to be torn in handling. When the truck is ready to be taken out again, the one doing so is required to sign a receipt at the bottom of this ticket, and also the following:

> "I have examined my truck and found same to be satisfactory. I accept charge for repairs hereon, and agree to pay the sum of.....dollars for labor performed and materials furnished."

Should any question come up later as to the time and materials used, it is only necessary to turn to the file and a complete statement is shown, signed by the person taking the truck out.

Mirrors for New York Trucks

All commercial vehicles of one-ton capacity, or greater, are compelled to be equipped with a mirror or reflecting device so adjusted that the operator will have full view of the condition of the traffic behind him. This ordinance, which became effective September 1, applies only to such trucks, buses and vehicles as may be operated upon the public highways outside cities of the first and second class.

Intercontinental Truck Co. of Rhode Island, Providence, has been incorporated with a capital stock of $25,000 to manufacture motor trucks, parts, etc.

Scientific Research
by the Hoover Laboratories

Working steel into perfect spheres to .0001 inch calls for precision in every operation.

To make a lot of 5/8 inch steel balls today so that they will not vary more than .0001 inch with another lot next month, is truly a scientific accomplishment, both in the preparation of the materials used and the production methods.

To do a certain thing scientifically means to permit of no guesswork. Each step, from start to finish, must be taken with accuracy. The procedure must be made with definiteness.

In the great Hoover plant there have been developed research and control laboratories such as are not found in any other ball plant in the country.

Such extreme measures are bound to carry the name Hoover far and beyond its present far-reaching scope.

One of the functions of the Hoover laboratories is to test for defects in raw steel—such as decarbonization, laps or seams. Close co-operation between the Hoover Steel Ball Company and the steel mills has done much to perfect raw steel for ball-making purposes. But in order that the high quality of Hoover Steel Balls be guarded and made certain, no effort is spared.

All Hoover balls are made from the same kind of steel—a special chrome alloy. All stock is subjected to the same special heat treatment.

Automatic hardening furnaces insure uniformity of hardness. Automatic grinding and gauging insure uniform finish and size.

This is the largest steel ball plant in the United States, making it possible for us to meet all shipping specifications.

Every batch of Hoover balls is subjected to compression and deformation tests. The Hoover research and control laboratories are provided with the most elaborate equipment to insure maintenance of Hoover highest quality.

Hoover Steel Ball Company
Ann Arbor Michigan

HOOVER
STEEL BALLS

Are Trade-ins and Cut Prices Advisable?

By WARREN EUGENE CRANE

THE manager of the truck department of the Eldridge Buick Co., of Seattle, Wash., has devised a series of weekly bulletins which he sends out to their agents throughout the Northwest each week. These letters are full of helpful suggestions about advertising and selling methods as well as statements of remarkable performances of their machines. He is a strong believer in one price to everyone, and expressed himself on the subject as follows:

"The motor truck business is in just about the same shape today that the pleasure car business was in five years ago. By that I mean that from the dealer's standpoint it is in its formative period. The manufacture of motor trucks has been going on for some time and the improvements which have been made have brought the modern commercial car down to what may be called successful business. It remains with the dealers, however, to apply the same business principles of ordinary merchandising to motor trucks that they would in selling any other commodity. We believe there can be no possible justification for a commercial car dealer cutting his retail prices in order to make a sale. Our anxiety to effect a sale has never caused us to sell to the retail trade at wholesale prices or to place an inflated value on used trucks taken in exchange.

"The wisdom of 'trade-ins' on motor trucks is a separate phase in itself, and, while we are inclined to took askance at most deals of this kind we know there are many reliable dealers who indulge in it to a considerable extent. Briefly, we cannot see why we should take in a used truck in exchange and guarantee its performance when it is not a profitable investment for its owner.

Discounts Are Not Commissions

"Discounts given the truck dealers by truck manufacturers are perfectly legitimate, as they are intended to give the dealer a margin of gross profit with which to protect his business. They should not be confused with commissions paid to salesmen or sales agents, as the dealer is not acting as the agent of the factory. The dealer buys his trucks from the manufacturers at a wholesale price and they are then his property. He carries them in stock in order to facilitate deliveries. He carries a stock of repair parts and maintains a well equipped garage or shop to render service to his customers. He has a selling cost and an overhead expense just as any retail store has in any other line of business, and he must buy his trucks from the manufacturer at prices sufficiently lower than that at which he sells them to cover all these expenses and leave him a reasonable profit on his investment and reimburse him for time and energy expended.

Concessions on Large Orders

"The user of a fleet of trucks is, in a sense, a wholesale customer of the dealer just as the dealer is in a much larger way the wholesale customer of the factory, and, as such, he is conceded to be entitled to a reduction in price in reasonable proportion to the number of trucks he is buying or will contract to buy within a definite period. It is common practice practically in every line of business and is thoroughly legitimate. It is apparent that the cost of selling ten trucks to one customer in one order is much less than it would be to sell those same ten trucks to ten different customers on ten different orders, and it is proper for the dealer to figure out in every such case just what such orders save him on his selling cost and what proportion of that saving he is willing to share with the buyer whose big purchasing power has made that saving possible.

Regarding the Sale of a Single Truck

"We cannot think of one good reason why a certain buyer of one truck should receive a better price on a truck than any other buyer of just one truck. One man's money is no better than any other, and the truck will do just as much for one as it will for the other. Many buyers ask for concessions on the ground that a truck in their business will have a big advertising value for the dealer. This argument does not work out in practice. The man who has received such a concession on his first truck will look for it on his second one and he will have no hesitancy in notifying his friends and acquaintances, and when they go around to the truck dealer to buy a truck they have no intention of paying any higher price for it than their friends pay. We can concede that one of our trucks in different lines of business would have a certain advertising value, but it is very easy to overrate that value. It should be more properly described as publicity value, as its effect is much more of a general nature than of an individual. On the other hand, the truck in actual service may bring inquiries from new prospective customers. But, when you get to the actual closing of the sale the truck in actual service in your locality will generally be forgotten and the prospect must be sold on the merits of the truck regardless of the other people using them.

The Stigma of Cutting Prices

"A voluntary cut price is an admission by the seller that his product is entirely too high priced to begin with, and, with that premise to start on, the question will occur to any ordinary buyer as to what is a fair price for the article offered. The cut price he has been quoted may be and usually is too high for the quality of the goods offered. If he buys at the cut price quoted even then he has no assurance that he has not paid too much for the article and more than other buyers are paying for it who may be able or be in a peculiar position to drive a shrewd bargain.

"A buyer should not be allowed to value a motor truck on a basis of the probable cost of the labor and material needed to build it any more than he should try to set a value on a $5000 government bond by the cost of the paper and ink. What he is concerned in, is what his investment in the motor truck or the government bond will yield him in net dividends over a period of years. That is what always determines the selling price of the bond or other securities and it should also determine in the buyer's mind the value of a motor truck to him.

Cost of Operation and Maintenance Chief Considerations

"Every motor truck buyer should be far more interested in the cost of operation and maintenance than in the price he pays for his truck. Take, for instance, a 3½-ton truck costing approximately $3500. The cost of operating this truck, including proper allowance for repairs and depreciation, interest, insurance, will run about $12 for a forty-mile day. In a year of 300 working days this operating cost represents an expense of approximately $3600, and in five years this will amount to approximately $18,000. If he stops to consider whether it is better to save 10 per cent. on the purchase price of the truck, which would amount to only $350, or 10 per cent. on its operating cost, which amount to $800, it is not difficult to convince a business man that price cutting does not pay.

"A shrewd buyer can usually be shown that it is a big advantage to him, one which is worth considerable actual cash, to buy his truck from a dealer who is making money on his trucks sold, because sooner or later he will have to have recourse to that dealer on matters of service. The dealer may be one of the best fellows in the world, and full of good intentions, but if he has not made good on his trucks sold, his good fellowship and good intentions cannot substitute for a stock of parts and a well equipped shop for rendering prompt and efficient service. We have run across buyers who say: 'Oh, well, we will take care of our own service,' but those same people are the ones who cry the loud-

The Resiliency is Built in the Wheel

RE-ORDERS

for Sewell Cushion Wheels the Best Proof of Satisfaction

Marshall Field & Co.	Standard Oil Co
Ford Motor Company	Swift & Co
Whitaker Paper Co.	Coca Co
Sears, Roebuck & Co.	Conti
Eastman Kodak Co.	Wa
Carnegie Steel Co.	Kin
F. H. Liggett Co.	Natio
Pillsbury Flour Mills	National
Hudson Motor Car Co.	Edison I
Bethlehem Steel Co.	Timken-R
General Chemical Co.	Wester

"The Judgment of Such Firms is Proof Enough for Me"

The Garage Superintendent whose responsibility it is to operate the Company's trucks, to keep them running, to keep down their cost of up-keep and operation, in a word to KNOW TRUCKS, also KNOWS the mechanical superiorities of Sewell Cushion Wheels.

The General Manager goes farther. There is other evidence that he demands, that impresses and convinces him. He reads the list of firms who for years have been ordering and re-ordering Sewell Cushion Wheels.

He knows their ratings in Dun and Bradstreet. He knows their financial strength and world-wide prominence. He knows the efficiency of their methods and the care and thoroughness with which they BUY. He knows that they invest and RE-INVEST for profit only.

He knows that when such firms as Marshall Field & Co., Coca-Cola Co., The Ford Motor Company, Sears, Roebuck & Co., and The Standard Oil Co., order and re-order Sewell Cushion Wheels, year after year, they do it for only one purpose and only one reason.

That PURPOSE is to give their trucks and fleets of trucks the all-essential *Resiliency* which is Built in the Sewell Cushion Wheel; to preserve the mechanism, the efficiency and lengthen the lives of their trucks; to save tire-cost, repair cost and increase the actual running hours of their trucks.

And the REASON they continue to re-order Sewell Cushion Wheels is their own proof of the Economy realized in Sewell Wheels. The most discriminating truck owners in the country know what it means to have

"The Resiliency Built in the Wheel"

For eleven years we have been building resiliency into Motor Truck Wheels

Sewell Wheel Book to truck owners on request

The Sewell Cushion Wheel Company, Detroit, U. S. A.

Branches:

Birmingham, Ala.
Baltimore, Md.
Boston, Mass.
Buffalo, N. Y.
Chicago, Ill.
Cincinnati, Ohio
Clarksburg, W. Va.
Cleveland, Ohio
Columbus, Ohio
Dallas, Texas
Dayton, Ohio
Denver, Colo.
Indianapolis, Ind.
Kansas City, Mo.
Los Angeles, Cal.
Louisville, Ky.
Memphis, Tenn.
Milwaukee, Wis.
Minneapolis, Minn.
Newark, N. J.
New York, N. Y.
Omaha, Neb.
Portland, Ore.
Philadelphia, Pa.
Pittsburgh, Pa.
Rochester, N. Y.
Salt Lake City, Utah
San Francisco, Cal.
Seattle, Wash.
Springfield, Mass.
St. Louis, Mo.
Tampa, Fla.
Washington, D. C.

Sewell Cushion Wheels

"The Resiliency is Built in the Wheel"

est when the time comes that they need service. The usual history of the cut price dealer is that he soon realizes that he is not making money on his truck agency and he gives it up or the factory takes it away from him and places it with a new dealer if it can locate a good one. The new dealer has received no profit on the sale made by his predecessor and usually charges his predecessor's customer for the service which they were entitled to receive from the dealer who sold them their trucks. This is not an argument but a fact. It is a condition which confronts every buyer of a cut priced truck and those who refuse to give it due consideration will have to pay the price later on. There is no more disagreeable person in the world to do business with than the customer who will not pay the full price. He is what every customer would be if dealers should abandon their price lists. Dealers who are dealers and not auctioneers have proven to their own satisfaction time and again that their customers are just what they make them."

Milling Company Utilizes Its Trucks Both as Labor Transporters and Product Conveyors

Trucks Provided With Demountable Bodies. Enabling Conversion From Commercial Truck to Passenger Conveyance

By C. S. PERRIE

TWO trucks have solved a transportation problem for a mill located about six miles outside of Milford, N. H. Quite a number of this company's employees are residents of Milford and they are required to walk to and from work, as there is no railroad or trolley line that serves their section. During the war when labor was scarce and there was a tendency to migrate to the munition plants, the company was confronted with the problem of retaining its help, of supplying transportation to and from Milford.

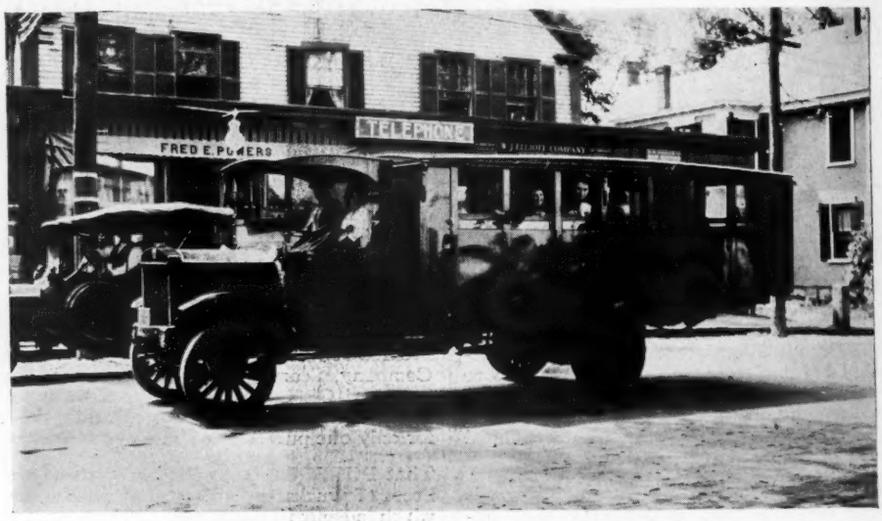
The mill had in service two trucks, a 4-ton Riker and a 4½-ton Packard, these being equipped with platform type of bodies and used for hauling wool from the nearest railroad freight station, conveying the finished product, hauling coal, supplies, etc. Consideration was given to engaging automobiles on a contract basis, but as there were a large number of persons to be transported the plan was abandoned.

Use Demountable Bodies

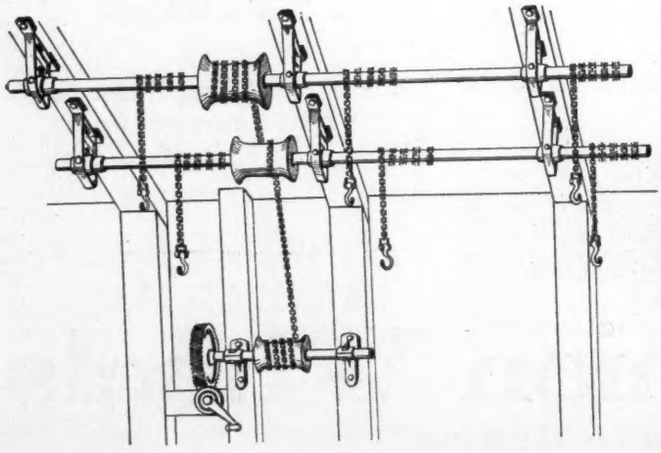
After careful consideration it was decided to construct two special bodies of the demountable type, and to construct a hoisting arrangement that would permit of quickly changing so as not to conflict with the regular working schedule of the trucks.

The bodies, which are about 16 ft. long and 6¾ ft. wide, differ from the usual passenger carrying type, in that the seats are of the double back to back type, extending across the body and at right angles to the frame of the chassis. The seats, which are of cane, are arranged in three rows. This layout enables the truck to accommodate from 25 to 50 persons, although all are not seated. Entrance is made through three doors, all of which are on the left side. The interior is electrically lighted, the connections being detachable from the source of current supply.

The bodies differ from the usual type in that there are no floors, the platform body permanently attached to the chassis serving as a floor. Under and attached to each seat are two inverted U shaped irons which ordinarily rest on the floor of the permanent body and serve as seat supports.



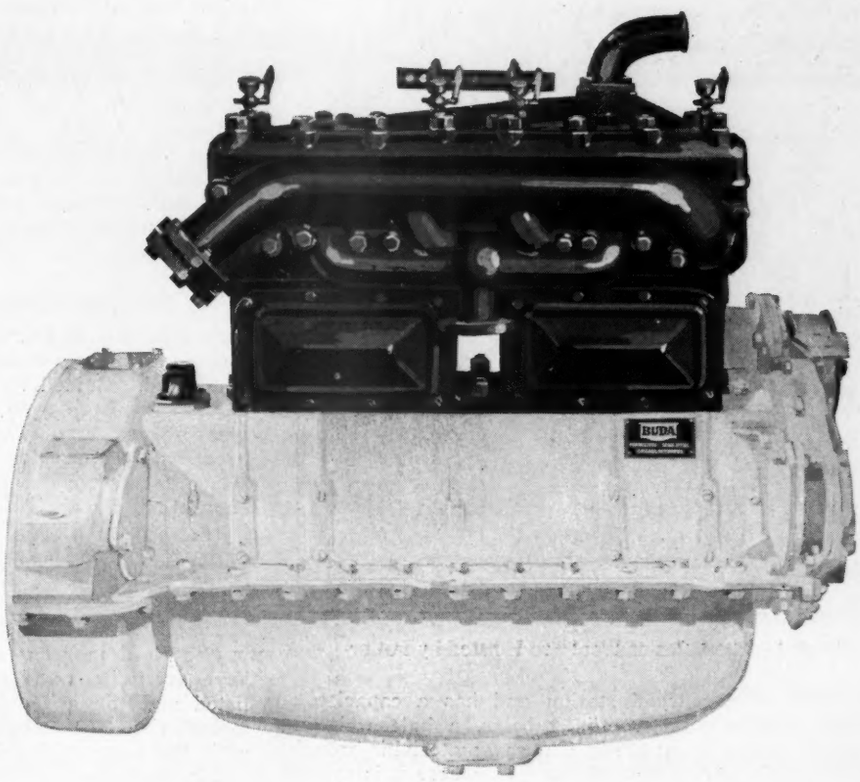
The Packard Truck Equipped With One of the Demountable Bodies. Leaving the Mill at Noon Conveying Help to Nearby Town for Lunch



Showing the Arrangement of the Body Hoist Operated by a Worm and Worm Gear, and Enabling Easy and Rapid Removal and Replacement of a Body

Double Chain Hoist

The chain hoist which is used for raising and lowering the bodies is simple in construction. It comprises two shafts supported by three bearings attached to the floor studs of the second story of the garage. Both shafts carry a drum over which runs a chain to another drum. The latter drum, which is mounted by brackets to the side wall, is operated by a worm and worm gear as shown in the accompanying sketch. Three chains are attached to each shaft and spaced to conform to three body hooks equi-distant on each side.



IN the building of Buda engines, men, materials and methods are dedicated to a single aim—the production of a high-duty engine capable of more than ordinary performance.

Recognizing the importance of perfect lubrication, Buda engineers have incorporated in their designs the most efficient of oiling systems.

Bearings of ample size, hand scraped to a perfect fit and thoroughly lubricated, add largely to the staying power and long life of Buda engines in the most severe service.

In establishing and maintaining an unexcelled record of smooth, consistent performance, Buda engines have contributed to the good name of many prominent trucks, tractors and passenger cars.

THE BUDA COMPANY, *Harvey* (CHICAGO SUBURB), *Ill.*
ESTABLISHED 1881

BUDA
The
ENGINE

The operation is simple. The truck with passenger body is run under the hoist, the hooks of the chains attached to those on the body and turning the crank attached to the worm operates all three chains as well as the drum member, raising the body free from the platform member. The process is reversed in attaching the passenger body which has three angle irons on either side. These irons have openings which register with studs on the platform body, and the passenger body is secured by a form of wing nut. It requires but three minutes to effect a change.

The trucks run to Milford in the morning, bringing the help to the mill and return them at night. At noon one truck is employed to transport those desiring to go to Wilton, about two miles distant, for their lunch.

The Riker truck is employed to haul bales of wool from the storehouses and railroad station and has a capacity of from 17 to 20 bales, a bale weighing about 300 lb. The raw material is brought to a side of the mill, where it is rapidly discharged by a form of chute extending to the ground. The bales are lifted up the chute by power. Mention is not made of the company as it is averse to publicity.

The Riker Truck Being Unloaded. The Bales of Wool Are Hoisted by Power

Good Advice to Fleet Owners

IT IS cheaper to maintain a motor truck in perfect condition than it is to operate one in an invalid state of repair. The most successful operators of truck fleets are those companies who demand rigid inspection from their mechanics and who "catch mechanical trouble before it starts." These and other valuable pointers are brought out in an educational campaign conducted by the B. F. Goodrich Rubber Co.

Three factors which cut deep into the profits of motor trucking and which are directly traceable to lax inspection and lack of repair, are: decreased production caused by idle truck; cost of repairs and new parts, and discarding the truck before it has delivered the mileage built into it. The annoyance of these three trucking bugbears can be reduced to minimum by inspection.

According to the Goodrich Co., the most efficient way to inspect is to formulate a system of questions which are to be answered daily by the driver.

The inspection must disclose the location and nature of the mechanical trouble, but it would be too expensive an item to thoroughly inspect each truck in a fleet daily. The driver must be depended upon to furnish the clue. This has been done most successfully by the driver's answers to ten simple but searching questions printed on the back of his daily report cards. These questions are in addition to his regular reports which indicate work accomplished, time of trips, supplies used, etc.

Here are the ten questions, answers to which will furnish valuable tips for the night mechanical experts to follow up:

1. Does truck lack power?
2. Are brakes working properly?
3. Does clutch engage smoothly?
4. Are lights working properly?
5. Is engine clean?
6. Does truck squeak?
7. Does truck rattle?
8. Are wheel bearings properly adjusted?
9. Does truck leak anywhere?
10. Is truck equipped with fire extinguisher?

At first glance these questions may seem too simple to be of value in running down mechanical troubles. For example, by going into the first question—"Does truck lack power"—a little deeper, the engine may lack power for any one of the following reasons: Spark plug gaps not properly adjusted; one or more valves leaking; fuel mixture too lean; insufficient lubrication; improper grade of oil; breaker points need adjustment or renewal; brakes not entirely released or dragging, and excessive carbon accumulation.

Inspection must not stop with the driver's report of mechanical trouble and the follow up and repair by the garage mechanic. This is merely a safeguard against serious trouble. A more thorough inspection is required from time to time.

Thorough Monthly Inspection

At intervals of not more than once a month a minute inspection should be conducted. Guided by a chart the mechanic should go over every part of the truck regardless of whether trouble has been reported previously or not. Certain ailments appearing on a new truck should call for an immediate inspection. Large operators have found it profitable to have on hand spare engines to substitute rather than hold the truck out of service for extensive repair.

The chart which guides the mechanics in the rigid monthly inspection should have every item and part of the truck listed and they should be arranged in logical sequence. It should commence with the bumper, hood, cover, starting crank, compression, piston and so on down the line to the license bracket and tail light, so that the inspector beginning at the front end of the truck can examine every part in order, without retracing a step. This arrangement makes for speed in inspection without detracting from thoroughness.

Townfolks Wonder

There is an interesting human angle to the use of the truck and that is the attitude of the people of Burlington towards George Jimmo. Accustomed as they have been to see him faultlessly dressed and driving a high priced passenger car (he sold cars as well as trucks), they cannot understand his being perched on a truck driving lumber through the city streets, and wearing clothing in keeping with the job. "I guess they think I am crazy," he remarked to the writer, who accompanied the truck on a round trip. H. Jimmo & Son are going to clean up a tidy sum on that lumber tract, thanks to the truck. And, when the lumber is turned into cash, George Jimmo is going back to selling trucks, at which he has achieved considerable success.

British Automobile Effort in France

On the Western Front in France the British Army authorities were employing in all 46,700 automobiles, of which 30,000 were trucks, and for the maintenance of every mile of road 100 tons of material was required each fortnight.

SERVICE—THEN SALES

HOW to defeat friction—this is the story carried to industry the country over by S K F representatives.

These men are, first of all, Bearing Engineers—salesmen only as they serve.

It is not too much to say that this man-to-man contact, backed by the fund of knowledge constantly available in the S K F Research Laboratories, will be an invaluable aid to the manufacturer in the correction of his technical difficulties.

And only on this basis is S K F Industries willing to undertake the examination of a bearing problem—not looking merely to the sale of a specific product, but on a far broader policy of rendering an honest, impartial service.

Manufacturers are invited to avail themselves of this service at any time

S K F INDUSTRIES, INCORPORATED
Sales, Service and Research Division
165 Broadway, New York City

(558)

SKF INDUSTRIES

Hess-Bright Ball Bearings
S K F Ball Bearings
Atlas Steel Balls
Gronkvist Chucks
Transmission Hangers

Metal and Rubber Markets

Steel Market Slow, Due to Strike

Latest returns show that conditions in the striking areas have greatly improved. The producers are satisfied with the condition of industry at the present time. Each day sees more of the workmen at their accustomed places.

There is no indication of panic among the buyers, but they have done little, awaiting the time when the market shows signs of remaining stable, and there are indications of all production returning to its normal condition.

Steel Products Prices

Per ton, Pittsburgh—			
Bessemer billets	$38 50	a	....
Open hearth	38 50	a	....
Forging billets	51 00	a	....
Sheet bars	42 00	a	....

Sheets

The following prices are for 100-bundle lots and over f.o.b. mill:

Blue Annealed Sheets—			
Pittsburgh (base)	$3 55	a	....
Philadelphia	3 79	a	....
Chicago	3 82	a	....
Galvanized Sheets of Black Sheet Gauge—			
Pittsburgh	$5 70	a	....
Chicago	5 97	a	....
Tin—Mill Black Plate—			
Pittsburgh	$4 35	a	....

Tin Plate

Tin plate, pme, per base box	$7 00	a	....
Terne plate, I. C.	7 05	a	....
8-lb. coating, per pkg.	13 80	a	....

Iron and Steel at Pittsburgh

Bessemer iron	$29 35	a	....
Bessemer steel, f.o.b. Pitts.	38 50	a	....
Skelp, grooved, steel	2 45	a	....
Skelp, sheared, steel	2 65	a	....
Ferromanganese (80 per cent.)	110 00	a	....
Steel, melting scrap	17 50	a	....
Steel bars	2 35	a	....
Wire rods	52 00	a	....
Iron bars	2 75	a	....
Plain wire	3 00	a	3 10
Plain wire, galvanized	3 70	a	....
Cut nails	4 92	a	....
Hoop steel	3 05	a	....
Chain rods	52 00	a	....

Prices of Old Metals

There is a fair demand for cast aluminum and clippings. Crucible and composition are much wanted, while sheet is neglected at the present time. Current prices follow:

	Buying.	Selling.
Aluminum—		
Cast scrap	21¼a21¾	24⅛a24½
Sheet scrap	21 a21½	22¾a23¼
Clippings	23¼a24¾	26 a27¼
Copper—		
Heavy machinery comp.	15¼a16¼	17½a18½
Heavy and wire	16½a16¾	17½x18½
Light and bottoms	14¼a14¾	15½a16½
Heavy, cut and crucible	17 a17½	19 a20
Brass, heavy	9¼a 9½	10¾a11¼
Brass, casting	11 a11½	12 a12½
Brass, light	7½a 8	9¾a10¼
No. 1 clean brass turn'gs	9¼a 9½	10¼a10¾
No. 1 comp. turnings	13¼a13¾	16¼a16½
Tea lead	3⅝a 3⅞	4¼a 4½
Lead, heavy	4⅝a 4⅞	5½a 5⅝
Zinc scrap	4¼a4½	5 a 5½
Pewter dishes	30 a32	35 a38
Block tin, scrap	45 a46	50 a52

Rubber Market in Fair Demand

There has been little change in the crude rubber market. Manufacturing consumers do not show any desire to anticipate. There is a fairly active demand for moderate quantities. Prices are generally steady.

Para—Up-river, per lb.	54¾a		55
Up-river, coarse	33	a	33½
Island, fine	48	a	48½
Island, coarse	22	a	22½
Caucho, ball, upper	33	a	33½
Caucho, ball, lower	..	a	..
Cameta	22	a	22½
Plantation—First latex	50	a	..
Brown crepe, thin, clean	44	a	45
Rolled brown, crepe	36	a	37
Smoked ribbed sheets	49	a	..
Centrals—Corinto	35	a	..
Esmeralda	34	a	..
Guayule, wet	25	a	27
Guayule, washed and dried	..	a	..
Balata block, Ciudad	76	a	78
Balata, block, Colombian	56½a		..
Balata, block, Panama	42	a	43
Balata, sheet	*1 00	a	..
Mexican—Scrap	33½a		..
Slab	*27	a	..
African—Massai, red	..	a	..

*Nominal.

COPPER.—There has been no change in the prices quoted by consumers who are holding for 23½ cents spot and September and 24 cents, October-November. The market remains quiet.

ALUMINUM.—The market is quiet. Virgin metal is still quoted at 33 cents per lb., in ingots 98 to 99 per cent.

TUNGSTEN.—Business is light, due to uncertainties arising from tariff legislation. Spot Chinese ore is offered at $7.25 to $7.50 per unit and Bolivian ore is held at $12. Western scheelite is held for $15 per unit, f.o.b. mine.

OTHER METAL PRODUCTS.—The following prices are current for brass and bronze products:

Copper sheets, hot rolled	33 50	a	....
Copper sheets, cold rolled	35 00	a	....
Copper bottoms	41 50	a	....
Seamless tubing, bronze	40 00	a	....
Cut lead sheets	9 00	a	....
Copper rods	24 75	a	....
Copper wire	26 00	a	....
High brass wire	27 75	a	....
High brass sheets	27 75	a	....
High brass rods	26 75	a	....
Low brass sheets	30 50	a	....
Low brass wire	30 50	a	....
Low brass rods	31 25	a	....
Brazed tubing, brass	39 00	a	....
Brazed tubing, bronze	44 25	a	....
Seamless tubing, brass	36 00	a	....
Seamless tubing, copper	37 50	a	....

SCRAP RUBBER.—The market has a steady undertone. Prices are unchanged.

Tires—Automobile	3½a		..
Bicycles, pneumatic	2½a		..

Judging Business Conditions by Truck Sales

By ROLFE C. SPINNING
Advertising Manager Service Motor Truck Co.

Today we are attempting to get more complete information about our own businesses and economic conditions in general than ever before. We realize the greater prosperity and profits which are bound to accrue when our business affairs are made to conform more closely to the very changing economic conditions.

To help us more accurately gauge conditions, we are supplied with various data—index numbers, charts showing bank clearings, prices of certain groups of stocks and bonds, wealth per capita, crop conditions, etc., ad infinitum.

But we are wondering why volume of **truck sales** should not furnish a good rule by which to measure the country's business activity.

For transportation is absolutely fundamental. It was not so very long ago that every family which came to our shores was self-sustaining—complete within itself. It was supplied with vegetables which it raised in its own garden, and game shot with its own blunderbuss. As population increased, however, communities developed, and with them came a greater exchange of commodities and service. But it was not until transportation began to develop that any interchange between the various villages and towns took place.

With transportation the people in one town were able to exchange their products for the product of other communities. Each village was able to do the work for which it was best adapted and exchange its products for goods which another community could make better—and business grew with transportation through all its phases—waterways, railroads, and now, overland, by truck.

When business is depressed, it is because people, for one reason or other, are not buying goods. When they are not buying goods, other people are not making them and earning money. Without money they are unable to buy. It is an endless circle. When this condition exists there are not so many goods to be transported from one place to another; it is not necessary for raw materials to be hauled to manufacturing plants in such great volume; it is not necessary for manufactured goods to be hauled to the railroad or to the ultimate consumer. There is not the same amount of goods in transit as there is when business is booming.

In as much as the truck is so distinctly a vehicle used for business purposes, it would seem to me very logical to suppose that when the demand for trucks is large it is a pretty safe indication that business is good.

Using this as a gauge and taking no other factors into consideration, our company finds business better today than it has been at any time since the signing of the armistice.

Maccar Truck Co., Scranton, Pa., announces that it has opened an export office at 21 Park Row, New York City. M. S. May is in charge of the office. A considerable volume of business has been booked already, including an order for 500 cars from H. I. Jacobson of the Russian Trading Corporation.

The Truck Tire That Makes Lasting Friends

"RAY'S CARDED COTTON"
Ray Cotton Company
COTTON AND CARDED COTTON
FRANKLIN, MASS. May 13 1919
Polack Tyre & Rubber Co..
New York, N.Y.
Gentlemen:-
Replying to your favor of the 1st inst. as to our experience with the use of Polack Tyres on our trucks, will say that we have used Polack Tyres exclusively on all of our trucks for the past 7 or 8 years and this fact is evidence enough that they must have given good satisfaction.
We are also pleased to say that we have always received prompt and courteous treatment from your Company.
Very truly yours,
RAY COTTON COMPANY,
Mgr.
(Formerly Estate of
WBL/C/F.
POLACK TYRE & RUBBER CO.

BECAUSE of their *exceptional quality*, Polack Truck Tires continue to give satisfaction *year after year.*

Years of specialization with one product—the pioneer of all Truck Tires—have established Quality in Polack Truck Tires on a certain scientific basis that assures Truck Users fine service as consistent as it is exceptional.

Dealers can take advantage of the attractive money-making opportunity in selling Polack Truck Tires to the best class of truck users.

The superior performance of Polack Truck Tires in all lines of business assures dealers a constantly growing volume and the lasting good-will of their customers.

With a product that is right, a price that is right, and an adjustment basis that is an established fact, not an innovation, the Polack dealer proposition undoubtedly offers an attractive money-making opportunity.

POLACK TRUCK TIRES

SINCE 1899 WORLD'S STANDARD

—*complete in both Regular type and High Crown type.*
—enable Dealers to dominate the best and most profitable truck-user business in their territory not only the first year, but every year.

Write for full details of Polack Dealer Proposition in open territory

POLACK TYRE & RUBBER CO.

1876 BROADWAY, -- NEW YORK.

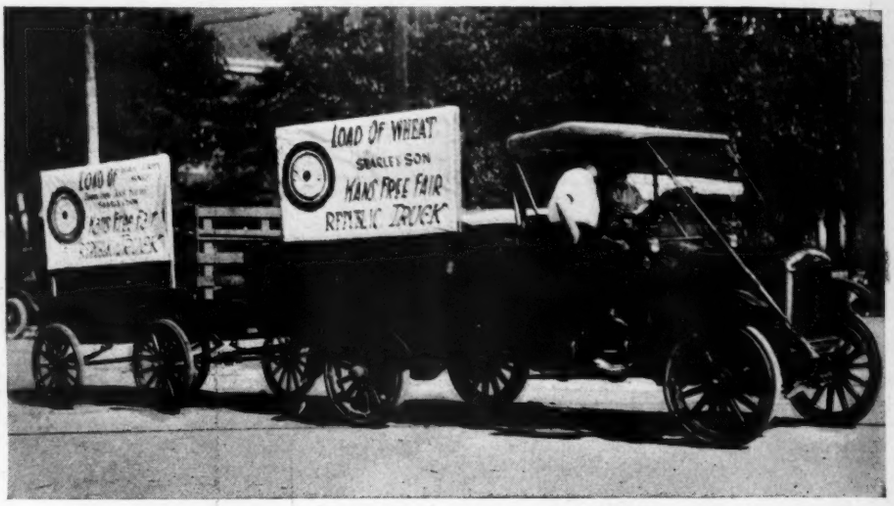
Ship-by-Truck and Good Roads Day at the Kansas Free Fair Was Another Demonstration of Successful Propaganda in This Direction

MOTORIZED farm transportation in Kansas received its greatest impetus at the Kansas Free Fair, Topeka, September 10, through the biggest display of farm motor trucks ever brought together west of the Mississippi River, in which the economy of motor transportation, together with good roads, was principally featured. A parade of farm-owned trucks together with those displayed by all the truck dealers in the city, made a line, consisting of more than 100 machines, six blocks long. The exhibit was viewed with intense interest by thousands of spectators. In fact, the greater percentage of the attendants were men who are or will be directly related to power transportation.

The success of the motor transportation and good roads propaganda was the result of unceasing, well-directed effort on the part of the management, augmented by the enthusiasm and co-operative spirit of owners and dealers. Governor Henry J. Allen issued a proclamation calling special attention to the importance of the event, and Senator Arthur Capper offered $100 in cash prizes to be awarded to the truck owners having the best decorated and operated machines. Competition for these prizes was limited to farm owned trucks.

Topeka dealers took advantage of the opportunity afforded by this motor transportation day to make an impressive entry in the parade. Trucks for delivery, heavy hauling, and in fact, for all uses to which a light or heavy truck may be put, were demonstrated. The largest showing was made by the local Paige dealer with 28 trucks in line, but other makes were well represented.

In the contest for the cash prizes, a Ford one-ton machine, loaded with varieties of farm produce, won first. Second prize was awarded to a one-ton Republic truck hauling 3370 lb. of wheat and pulling in addition 1000 lb. of hogs in a trailer, making the trip of nine miles over dirt roads in 37 minutes. A Ford one-ton truck carried away third prize, while an Acme two-ton machine, hauling 6170 lb. of corn, won fourth prize.



Second Prize Was Carried Away by a One-Ton Republic Truck, Which Capably Hauled 3,370 Pounds of Wheat and at the Same Time Pulled an Additional 1,000 Pounds of Hogs in a Trailer

This One-Ton Ford Truck, Loaded With an Attractively Arranged Variety of Farm Produce Was Awarded First Prize

Other makes of trucks receiving favorable mention from the judges were a one-and-one-half-ton Republic, a three-quarter-ton Oldsmobile, a two-and-one-half-ton Republic, a one-and-one-half-ton Sandow, and a 1000-lb. Dodge.

Linking up the day's event with the ship-by-truck movement, eleven trucks were driven to Topeka from Kansas to take part in the parade. Excellent time was made on the trip, and every machine reached its destination in first class condition. The International, Indiana, G. M. C., Panhard, Bethlehem, Sterling, Kelly, Denby, Garford, Hurd and Commerce were represented in the fleet. The trip was managed by R. J. Fredman, of the Firestone ship-by-truck bureau.

West Favors Road Improvement

The Townsend Bill is strongly supported by the western states. This fact was brought out recently when governors from twenty-two states forwarded a petition to Congress urging it to increase immensely the annual appropriation for road building to be expended during the next five years. The action reflects plainly what the West thinks of the necessity of highways and furnishes an influence which cannot be overlooked.

Ahlberg Bearing Co., Chicago, Ill., announces the opening of a new branch in Pittsburgh, Pa. This is the third branch opened within the past two months by this company which specializes in regrinding worn ball bearings and giving service on new bearings.

THE COMMERCIAL CAR JOURNAL

Entered as second-class matter at the Post Office at Philadelphia, Pa., under the act of March 3, 1879

Vol. XVIII PHILADELPHIA, NOVEMBER 15, 1919 No. 3

Published the 15th of each month by the

CHILTON COMPANY

Market and 49th Streets Philadelphia, U.S.A.

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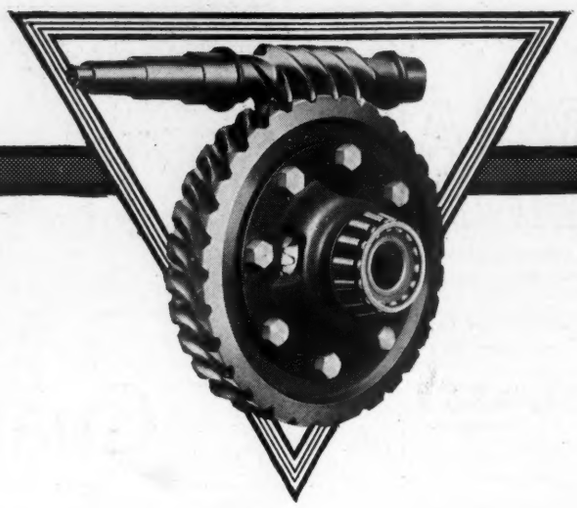
Guaranteed Forgings

We have no desire to make ALL the forgings used in the industry, but for any VITAL part where the forgings call for "more than ordinary" service, we gladly offer our facilities for the solution of your problems.

Wyman-Gordon

"The Crankshaft Makers"

Worcester, Mass.
Cleveland, Ohio



Passenger Car Simplicity Motor Truck Strength

Simplicity and Strength expresses the basic principles of Timken-Detroit axle designing.

The rear-drive experience of Timken-Detroit is summed up in this brief statement—

"As few parts as possible—ample strength in each—direct lubrication—oil-tight, dust proof housing—quiet gears."

These are fundamental *in either truck or passenger car*, and are equally evident in the swift running helical bevel of the passenger car and the slower moving worm and worm wheel of the motor truck.

To each of these Timken-Detroit policy gave the impetus that makes them today the leading forms of drive in America's motor cars and trucks.

THE TIMKEN-DETROIT AXLE COMPANY
Detroit, Mich.

TIMKEN-DETROIT

PASSENGER CAR & MOTOR TRUCK AXLES